THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

[REGISTERED AS A NEWSPAPER.]

VOL. XXIV. No. 591.] LONDON, SEPTEMBER 8, 1874. [26TH YEAR.] Price 6d.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis—10,000 cubic feet of gas per ton of coal; 26-candle gas; 13¼ cwt. coke per ton of coal.
The London Exhibition in 1851 was lighted with gas made from Ramsay's Cannel.
RAMSAY'S PATENT CONDENSED COKE.
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RAMSAY'S FIRE-CLAY ARTICLES.
GAS-RETORTS, introduced 1838. FIRE-BRICK WORKS, established 1804. FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire-Clay. The Fire-Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article. The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the Works are the most extensive in the Kingdom.
Manufactories—Derwenthaugh, Swalwell, and Hebburn Quay, near Newcastle-on-Tyne; and London Wharves—Falcon Wharf, No. 80, Bankside; and Honduras Wharf, Cubit Town. Large stocks kept.
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GENUINE TORBAY PAINT
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(Mixed ready for use).
FOUR PRIZE MEDALS.
WORKS: BRIXHAM, TORBAY.
These Paints are now used in 100 Country Gas-Works, and by all (but one) of the London Gas Companies, on Gasholders, Scrubbers, Purifiers, &c. They will cover tar effectually. Also used by the Admiralty, War Office, Railway Companies, Founders, &c.
They prevent and arrest rust, and protect iron from the action of water, sulphurous and gaseous exhalations.
The covering powers are considerably greater than those of any other Paint.—*See "Engineer," Nov. 2, 1866.*
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SPECIALITIES IN WOOD
FOR
PURIFIERS & SCRUBBERS
MADE FROM THE BEST QUALITY
OF
WELL-SEASONED PLANKS.
BROOKFIELD WORKS,
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COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, BLAYDON-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS-RETORTS and other OBJECTS in FIRE-CLAY," and they were also awarded at the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS-RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts and Fire-Bricks in the Kingdom. Orders for Fire-Clay Retorts of all shapes and dimensions, and to fit any shaped Mouthpiece, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.
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JOHN RUSSELL AND CO.,
THE OLD TUBE-WORKS, WEDNESBURY
AND
THE ALMA WORKS, WALSALL.
Established at the commencement of Gas Lighting.
WAREHOUSES:
60, UPPER THAMES STREET;
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16, SOHO SQUARE,
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35, 36, 37, & 39, GRANBY ROW, MANCHESTER.
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J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water; Gun-Metal Cocks, Stocks, and Dies; Galvanized Tubes and High-Pressure Tubes, &c.
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BELL BARN ROAD, BIRMINGHAM,
MANUFACTURERS OF
WET AND DRY GAS-METERS,
OF
FIRST-CLASS MATERIALS & WORKMANSHIP;
Also, STATION-METERS, PRESSURE-GAUGES, STREET-LAMPS, REGULATORS, &c.
ESTABLISHED 1830.

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MANUFACTURERS OF
TELESCOPIC & SINGLE GASHOLDERS,
CAST & WROUGHT IRON TANKS FOR DITTO,
And Gas Apparatus of every Description.
Marine, Tubular, Cornish, Plain, Furnace, Saddle, and Range Boilers.
SUGAR, SALTPETRE, AND ALL KINDS OF PANS.
Roofs, Girders, and Bridges, and General Smith's Work.
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J. & W. ROMANS, Consulting Gas Engineers and Coal Factors, of Edinburgh and London, CONTRACT for supplying any quantity of COAL and CANNEL.
They are also Contractors for leasing Gas-Works, for supplying, erecting, or repairing gas apparatus and fire-clay goods.
Messrs. ROMANS, being lessees of several Gas-Works, have their Cannels tested in the ordinary working process, thus securing for their customers a guarantee beyond mere laboratory experiments.
Analysis, prices, and other information will be forwarded on application to their Offices, 8, Forth Street, EDINBURGH; 1, Walbrook, Mansion House, LONDON, or to the "Crown Wharf," Thomas Street, Limehouse, LONDON, where stocks of house, steam, and gas coal are always on hand.
Coal, machinery, fire goods, &c., shipped to all parts of the world.

THE
DUKE OF HAMILTON'S
LESMAHAGOW
CANNEL COAL.
AGENT:
JAMES M'KELVIE,
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PATENTEES OF THE
NATIONAL STANDARD GASOMETERS
For the English Government, and for the Government of the Netherlands;
MAKERS OF THE DUPLICATE COPY
Presented by Her Majesty's Government to the French Government;
AND MANUFACTURERS OF
IMPROVED
DRY GAS-METERS,
Warranted to Measure correctly, and not to vary.
RANELAGH WORKS, RANELAGH ROAD, PIMLICO, LONDON, S.W.;
236, GEORGE STREET, GLASGOW; AND 15, MARKET STREET, MANCHESTER.

G. G. and Co. have just received the only Medal awarded for Gas-Meters at the Vienna International Exhibition.

SILVER MEDAL, PARIS EXHIBITION, 1867.

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ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

WROUGHT-IRON TUBES AND FITTINGS

AND

LAP-WELDED IRON AND HOMOGENEOUS METAL BOILER TUBES.

Boiler-Tube Ferrules, Gun-Metal Gland Cocks, Water-Gauges, Whistles, &c.; Stocks, Taps, and Dies for Screwing, and Gas-Fitters Tools.

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MANUFACTURERS of FIRE-BRICKS, LUMPS, & TILES,

AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

N.B.—A Stock of 15 and 16 in. CIRCULAR RETORTS always on hand. Other kinds made to order on short Notice.

CAFFALL, THOMAS, & CO., LIMITED.

PATENT IMPROVED SEAL

FOR

GAS HYDRAULIC MAINS.

SAVES COAL, RETORTS, FUEL, LABOUR, TIME, SPACE, AND CAPITAL.

PREVENTS STOPPAGE OF ASCENSION-PIPES, DEPOSITION OF CARBON IN RETORTS, THICKENING OF TAR IN HYDRAULIC MAIN.

GIVES MORE GAS PER TON OF COAL, WITH HIGHER ILLUMINATING POWER, SATISFACTION, AND PROFIT TO SHAREHOLDERS AND MANAGERS.

IS STRONG, SIMPLE, EASILY FIXED AND WORKED, AND THOROUGHLY EFFICIENT AT ALL TIMES.

TESTIMONIAL.

Alton Gas and Coke Company, Alton, Hants, April 25, 1874.

GENTLEMEN,—In reply to your inquiry respecting your Patent Dip for Hydraulic Gas-Mains in use at these works, I beg to say that, upon looking into our carbonizing account for the last 12 weeks, and comparing the result with the same quarters of the past five years, I find that your Dip has given our Company an increase of 1286 feet of gas per ton of coals beyond the makes in the other years, notwithstanding the retorts have been in use for three years.

I may say that our Company are so satisfied with the Dips that it is intended to fit up the other retorts with them this summer.

I am, gentlemen, your obedient servant,

Messrs. Caffall, Thomas, and Co., Limited, 28, Gracechurch Street, E.C. WM. TRIMMING, Secretary.

Models may be seen, and information obtained, at the Offices, 28, Gracechurch Street.

TRADE MARK.

THE MEDAL FOR 1862.

The only Prize Medal awarded for TUBES & FITTINGS.

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WAREHOUSE: SOUTHWARK STREET, LONDON.

JAMES RUSSELL & SONS, LIMITED,

PATENTEES & FIRST MAKERS OF WROUGHT-IRON TUBES,

ONLY MAKERS OF HOMOGENEOUS METAL TUBES.

MANUFACTURERS OF

TUBES and FITTINGS for GAS, STEAM, and WATER;

LAP-WELDED, LOCOMOTIVE, MARINE, and other BOILER TUBES;

HYDRAULIC TUBES, BEDSTEAD TUBES, WELL TUBES, TELEGRAPH POSTS, COILS, &c.;

GAS-FITTERS TOOLS, VALVES, COCKS, &c.

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CAST & WROUGHT IRON TANKS FOR DITTO;

PURIFIERS, CONDENSERS, SCRUBBERS, RETORTS, VALVES;

IMPROVED WROUGHT-IRON RETORT-LIDS, CROSS-BARS, & SCREWS;

AND GAS APPARATUS OF EVERY DESCRIPTION.

SOLE MANUFACTURERS OF LIVESEY'S PATENT GASHOLDER MAN-LID,

By use of which Man-lid, inlet and outlet pipes can be examined and cleansed without loss of gas in crown of holder, or ingress of atmospheric air.

ROOFS, GIRDERS, BRIDGES, AND BOILERS OF ALL KINDS.

Drawings, Specifications, and Estimates supplied on application.

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COOMBS WOOD PATENT TUBE-WORKS,

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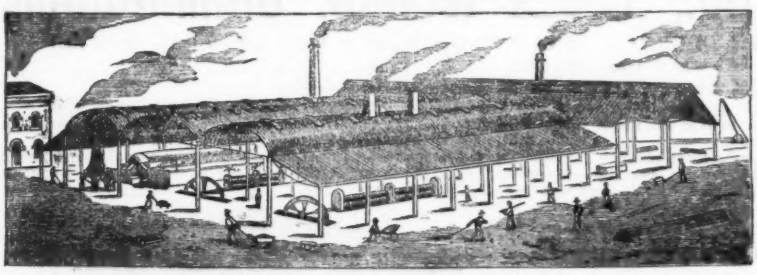
FOR GAS, STEAM, AND WATER;

Also ORDINARY WELDED WROUGHT-IRON TUBES and FITTINGS,

FOR GAS, STEAM, & WATER, EITHER BLACK, GALVANIZED, OR ENAMELLED.

CORE BARS FOR IRONFOUNDERS, STOCKS, TAPS, AND DIES, IRON COCKS, &c.

London Agent—W. G. DAVIS, 2, Brabant Court, Philpot Lane, E.C.



Iron Roofs, Iron Buildings, &c.

ISAAC DIXON,

HATTON GARDEN LIVERPOOL,

MANUFACTURER OF

GALVANIZED CORRUGATED CURVED IRON ROOFING, WROUGHT-IRON FRAMED ROOFING, IRON BUILDINGS

OF EVERY KIND.

WROUGHT-IRON TANKS, WROUGHT-IRON PIPES & TROUGHS, & GENERAL WROUGHT IRON WORK.

I. D.'s CORRUGATED CURVED SELF-SUPPORTING IRON ROOFS are specially suitable for Forges, Rolling-Mills, Iron-Works, Shipbuilding Yards, Mines, Collieries, Gas and Water Works, and for general purposes.

For Roofs with Timber Framing, I. D.'S GALVANIZED OR PAINTED CORRUGATED SLATES OR SHEETS form a durable and cheap covering, costing only about the same, when fixed complete, as felt and boards.

DRAWINGS AND ESTIMATES ON APPLICATION.

HODGE & CO.'S

IMPROVED VENTILATING SUN-LIGHTS

WITH TALC REFLECTORS AND SELF-ACTING VALVES

TO PREVENT DOWN-DRAUGHT;

VENTILATING GLOBE LIGHTS for DINING-ROOMS, LIBRARIES, &c.

Ormolu, Bronze, & Crystal Gaseliers;

MEDIÆVAL CHURCH WORK AND CORONÆ

COCKS, VALVES, and FITTINGS for GAS, STEAM, and WATER;

COLUMNS, BRACKETS, & STREET LANTERNS;

BLACK AND GALVANIZED BARREL COMPO AND TIN PIPE.

GAS ENGINEERS,

100, HATTON GARDEN, LONDON.

Drawings and Prices upon application.

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GRANGE WORKS, EDINBURGH,

MANUFACTURERS OF

CONSUMERS IMPROVED GAS-METERS;

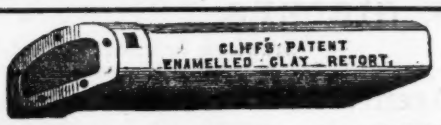
IMPROVED DRY GAS-METERS, in Cast Iron and Tin Cases,

OF THE HIGHEST EXCELLENCE,

Warranted to measure correctly, and not to vary.

STATION METERS AND GOVERNORS,

EXPERIMENTAL METERS, PHOTOMETERS, GASHOLDERS, &c.

Established 

1795.

JOSEPH CLIFF & SON,

THE ORIGINAL

WORTLEY FIRE-BRICK WORKS,

NEAR LEEDS,

MANUFACTURERS OF ALL DESCRIPTIONS OF

FIRE GOODS, and Salt-Glazed Drain-Pipes.

LONDON WHARF:

Wharf No. 4, inside Great Northern Goods Station, King's Cross, N.;

LIVERPOOL—1, Back Leeds Street,

Where is always kept a Stock of Retorts, Fire-Bricks, Terra Cotta Ware, and Drain-Pipes.

JOHN WRIGHT AND CO., ESSEX WORKS, BIRMINGHAM,

Beg to call the attention of MANAGERS and DIRECTORS of GAS COMPANIES to the following letter which they have lately received.

COPY OF LETTER RECEIVED FROM MAGNUS OHREN, Esq.

To Messrs. John Wright and Co., Essex Works, Birmingham. *Crystal Palace District Gas Company, Lower Sydenham, S.E.*

Dear Sirs,—In reply to your inquiries, I am glad to state that the use of GAS COOKING AND HEATING STOVES has been a complete success here. We have several hundred in use in our districts. We also find it advantageous to let out Stoves at a small rental. We have now 275 Stoves at rent.

The Stoves you make I can with confidence recommend, having so many in use, and giving satisfaction. I need scarcely point out to you the advantage to Gas Companies to recommend the use of Gas Stoves to their Gas Consumers, even where they do not supply them on sale or rent, as the use of Gas Stoves brings day consumption, and thus the Company make a profit by day as well as by night.—I am, dear sirs, your faithfully, MAGNUS OHREN.

GAS COOKING STOVES

(PORCELAIN AND IRON).

Size, 25½ in. high; 14 in. wide; 12½ in. back to front.

Price 50s., complete with Pan and Gridiron.

REFLECTOR GAS COOKING STOVES.

BREAKFAST COOKERS.

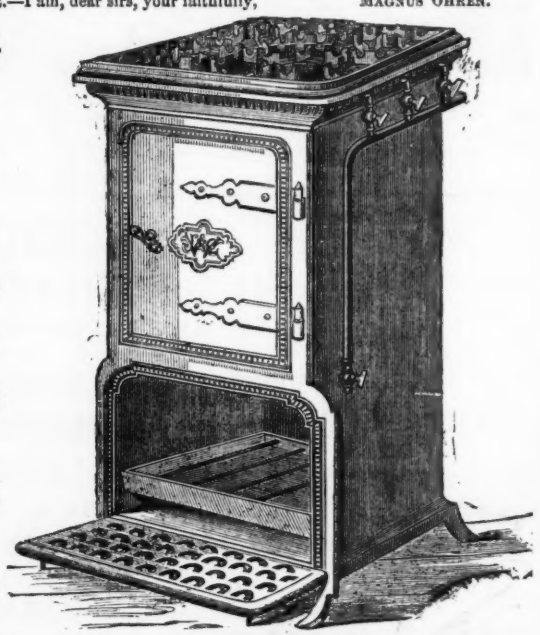
BATHS HEATED by GAS

GAS STOVES

For Boiling, Broiling, Preserving, Heating Flat Irons, and for all other Domestic purposes.

Gas Companies and the Trade who have not our Illustrated Catalogue are respectfully requested to apply for same.

A LIBERAL DISCOUNT to the TRADE.

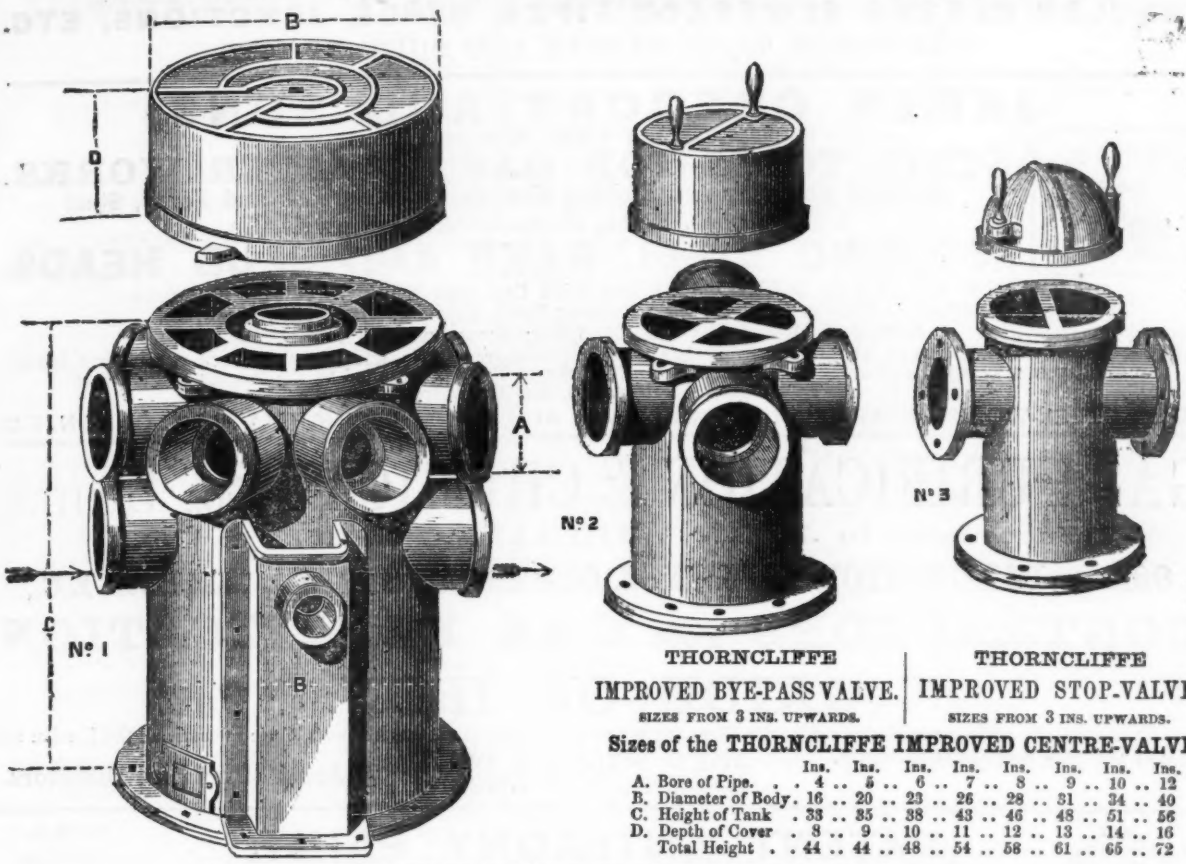


No. 56.—REFLECTOR GAS COOKER. Size, 36 in. high, 18 in. wide; Hot-Plate, 22 in. × 16 in., with 3 Burners for Boiling. In addition to the advantages of every other Reflecting Gas Cooker, the manufacturers claim the following:—1st, a larger Hot-Plate; 2nd, a larger oven; 3rd, a far better looking and better made article. Price £5.

MESSRS. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, NEAR SHEFFIELD.

IMPROVED CENTRE-VALVES.



THORNCLIFFE IMPROVED BYE-PASS VALVE. SIZES FROM 3 INS. UPWARDS.

THORNCLIFFE IMPROVED STOP-VALVE. SIZES FROM 3 INS. UPWARDS.

Sizes of the THORNCLIFFE IMPROVED CENTRE-VALVE.

	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
A. Bore of Pipe. . .	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..	12
B. Diameter of Body.	16 ..	20 ..	23 ..	26 ..	28 ..	31 ..	34 ..	40
C. Height of Tank .	33 ..	35 ..	38 ..	43 ..	46 ..	48 ..	51 ..	56
D. Depth of Cover .	8 ..	9 ..	10 ..	11 ..	12 ..	13 ..	14 ..	16
Total Height . .	44 ..	44 ..	48 ..	54 ..	58 ..	61 ..	65 ..	72

In all cases the Covers are cast heavy enough to resist any required pressure.

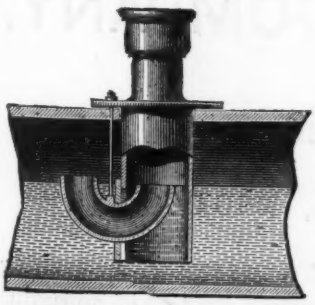
The advantages derived from the adoption of these Valves are so manifest and cardinal that in the immediate character of the change—the simplicity of the machine—the facility affording for cleaning out connexions between Valve and Purifier—the perfect collection and delivery by suitable overflow of the ammonia, at a greatly diminished depth from ground-line over the old form of Valve—the advantage of connecting on the same level, and at any angle, or opposite to each other, the inlet and outlet pipes without dip or rise—the clear acquisition of space in the purifying-house, by being able to place the boxes nearer together, the new Valve being entirely under the floor—and lastly, though of the greatest importance, the passage of crude and unpurified gas during the change is minimized to the merest fraction, thus preventing the fouling by impure gas the delicate machinery and easily affected exposed movements of the station-meter, thereby preventing the introduction of the enemy (unpurified gas) into the gasholder. Also a dead abutment is offered to all back pressure, imparting thereby to the gauges, governors, and hydraulic seals, a steadiness of action never realized with the once famous, but now fast becoming obsolete, Hydraulic Centre-Valve.

N., C., and Co. also Manufacture and Erect

PURIFIERS, CONDENSERS, SCRUBBERS, GASHOLDERS, ROOFS,

And every description of Gas Machinery.

TENDERS GIVEN FOR WORK FIXED COMPLETE IN ANY PART OF THE KINGDOM.



Messrs. N. C. & Co. are also the Sole Agents for

HAWKINS' PATENT SELF-ACTING DIP-PIPES.

These Patent Self-Acting Dip-Pipes are rapidly coming into general use by gas companies. By their use the whole of the pressure caused by the old kind of Dip-Pipes is entirely removed, therefore the yield of gas per ton of coal is considerably increased. They also act as a perfect safeguard against the deposit of carbon (or scurf) inside the retorts.

A saving of fuel is effected, and the wear and tear to the retorts greatly diminished.

They are also perfectly Self-Acting, they being regulated solely by the gas. They cannot get out of repair, and when once fixed, will last as long as the old kind, and can be easily adjusted should the hydraulic main sink; they can also be worked with advantage where there is no exhauster.

Testimonials can be had from Herbert Unwin, Esq., engineer of the Sheffield United Gaslight Company and the Penistone Gas Company. At both these companies works they have been in constant operation for several months. Further testimonials can be had on application to the Patentee, J. G. Hawkins, Effingham Street Gas-Works, Sheffield.

For Prices, &c., apply to

Messrs. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, near SHEFFIELD.

LIVESEY FIRE-CLAY WORKS.

NEAR BLACKBURN, LANCASHIRE.

(ESTABLISHED 1835.)

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

JAMES GREGORY AND SONS,

MANUFACTURERS OF EVERY DESCRIPTION OF

Corporate Mark SOHO Granted 1763.

STEEL TOOLS FOR GAS & WATER WORKS.

All-Steel Charging and Stoking Shovels, Coke Screens and Forks, Steel Scoops, Picks, Mattocks, Axes, Trowels, &c.

WELDING STEEL RAKE AND SPUD HEADS.

SUPERIOR CAST-STEEL FILES and SAWS; Solid Cast-Steel Hand and Sledge Hammers.
BEST CAST STEEL for making Chisels, Turning Tools, Taps and Dies, Drills, Snaps, &c.
SINGLE AND DOUBLE SHEAR, Spring, Sheet, and Blister Steel.
SILVER STEEL for Rod-Chisels and Diamond-Points for Cutting Cast-Iron Pipes, and for other work requiring a Special Quality and Temper, and every other description of Steel and Tools as supplied to the largest London Gas Companies, Contractors, and Engineers.

SOHO STEEL-WORKS, SHEFFIELD, & 2, GRESHAM BUILDINGS, BASINGHALL ST., LONDON, E.C.

GAS PURIFICATION & CHEMICAL Co., LIMITED,

(Successors to JOHN WILLIAM O'NEILL & CO.,)

Offices—PALMERSTON BUILDINGS, OLD BROAD STREET, LONDON, E.C.,

CONTRACTORS FOR GAS PURIFICATION BY OXIDE OF IRON.

The superiority of the material supplied by this Company is generally recognized, and it is now in use in nearly all the London and most of the large Provincial Gas-Works.

JOHN WILLIAM O'NEILL, SAMUEL H. JOHNSON, } Joint Managing Directors.

1862.

PATENT ANTIMONY PAINT.

MADE ONLY BY

GEORGE HALLETT & CO.,

296, ROTHERHITHE, LONDON, S.E.

CLASS II.

This Paint having been in general use over twelve years (especially in some of the principal Gas-Works), and proved itself the best light-coloured Paint produced for resisting the influence of vitiated atmospheres, it is important that its qualities should be more widely known.

It is not discoloured like white lead in a sulphuretted atmosphere, nor washed off like white zinc; and its light colour reflecting heat, produces much less expansion of gas in holders painted with it than with dark colours, besides rendering them much more sightly. Its specific gravity is so much below white lead that the same weight will cover one-third more surface, while it is equal in body; and its price being about the same (30s. per cwt.), it is actually one-third cheaper. From experience, its manufacture is greatly improved, and it is quite suitable for all purposes in which white lead is employed.

Reference is kindly permitted by the Engineers of the City of London, Commercial, London, and Surrey Consumers Gas Companies, who pronounce it the best Paint known for their purposes.

N.B.—Antimony Paint, COVERING SO MUCH MORE WORK, costs about 20s. per cwt., as compared with White Lead at 30s. per cwt.; a similar economy arises from its use in Steam and Gas Joints, for which purpose it is superior to White Lead.

SPECIAL DRIERS FOR ANTIMONY PAINT SUPPLIED.

THE

LANCASHIRE GAS-METER COMPANY,

LIMITED,

FALCON STREET, OLDHAM.

INCORPORATED, JUNE, 1874. CAPITAL, £20,000.

We desire to inform our Friends, Gas Companies, Gas Engineers, and others that we are erecting Works at this address, and hope in a short time to have the pleasure of submitting our lists of apparatus to them, and to solicit their patronage.

HENRY THOMAS, Managing Director

TANGYE BROTHERS AND HOLMAN,

LAURENCE POUNTNEY LANE, LONDON, E.C.,

SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS,

WITH

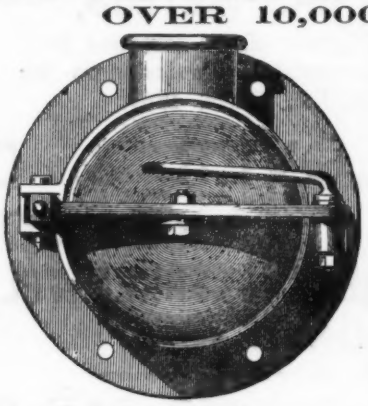
HOLMAN'S PATENT ECCENTRIC FASTENINGS & ANTI-FRICTION CATCHES.

OVER 10,000 IN USE.

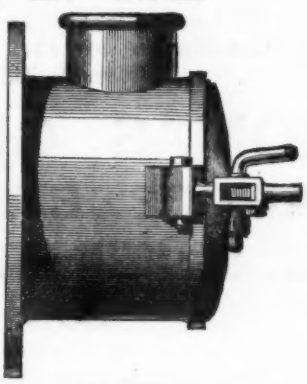
NO LUTING.

LIDS HINGED TO MOUTHPIECES; NO LIFTING ON OR OFF.

NO SCREWS FOR FASTENING.



FRONT VIEW.



SIDE VIEW.

SIMPLE.

ECONOMICAL.

DURABLE.

EFFECTIVE.

NO DUPLICATE LIDS REQUIRED.

These Lids are proved by many eminent Gas Engineers to be the most efficient, saving much time, labour, and expense; are opened and closed as quickly and with as little trouble as an ordinary furnace door, and by their use the Retorts are soundly sealed during the whole period of carbonization.

These Lids are Adopted by the following (among many other) Gas Companies:—

The Gaslight Company, Beckton (where over 2000 are in use).	The West Ham Gas Company.	The Salford Corporation Gas-Works.	The Carmarthen Gas-Works.
" Gaslight Company, Bow Common.	" Imperial Gaslight Company.	" Rochdale Corporation Gas-Works.	" Merthyr Tydfil Gas-Works.
" London Gaslight Company.	" Gas-Works, Arsenal, Woolwich.	" Liverpool United Gas-Works.	" Ystrad Gas-Works.
" Independent Gaslight Company.	" Commercial Gas Company.	" Birkenhead Gas-Works.	" St. Alban's Gas-Works.
" Phœnix Gaslight Company.	" Alliance and Dublin Gas-Works.	" Birmingham Gas-Works.	" Over Darwen Gas-Works.
" South Metropolitan Gaslight Co.	" Edinburgh Gas-Works.	" Nottingham Gas-Works.	" Aylesbury Gas-Works.
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I am, yours truly,

(Signed) G. C. TREWBY.

P.S.—We shall have very shortly about 3000 of your Lids in use.

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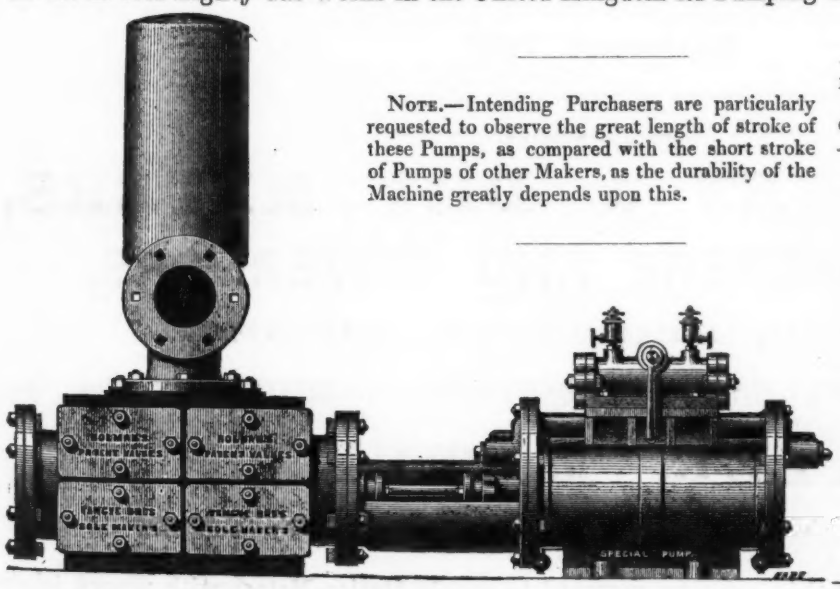

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4	3	12	2,200	20
6	3	12	2,200	25
4	4	12	3,900	25
6	4	12	3,900	30
6	5	12	6,100	35
7	5	12	6,100	40
8	5	12	6,100	45
6	6	12	8,800	40
8	6	12	8,800	50
7	7	12	11,900	50
10	7	12	11,900	65
8	8	18	15,660	65
10	8	18	15,660	75
10	9	24	19,800	90
12	9	24	19,800	110
10	10	24	24,400	100
14	10	24	24,400	140
12	12	24	35,240	140
21	12	36	35,240	285
14	14	24	47,960	180
26	14	48	47,960	450

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TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

NEW GASHOLDER AT REDHEUGH.—*With the present number, our subscribers will receive the second of the five working drawings we are enabled to give of this erection.*

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, SEPTEMBER 8, 1874.

Circular to Gas Companies.

THE Gas and Water Committee of the Corporation of the City of London have just issued a report, which will be found in another column. It will be remembered that about last St. Thomas's Day there was a good deal of excitement on gas matters in the City. The Chartered Company had given notice of their intention to apply for another revision of price, and it was known that the price the company intended to ask for was higher than that fixed by the revising commissioners in the previous spring. It was not, therefore, surprising that, at the wardmotes, gas was a prominent subject of discussion, and that at some, resolutions were passed urging the Corporation to oppose the application of the Chartered Company. Outlying parishes, destitute of corporate privileges, also appealed to the City, and, as we know, the Gas Committee instructed the solicitor to oppose the company. He did so, ineffectually; but there is one point on which Mr. Nelson recommends further action to be taken. He contends that the Chartered Company have no right to pay any money to the credit of the "defalcation account," unless the company are earning a full dividend and making good their insurance-fund with gas at *the statutable rate of 3s. 9d.* In such case, and in that only, he argues, surplus profits are applicable to the defalcation-fund. A similar objection is made to the payment of the expenses of the stokers strike; and the solicitor recommends that the Board of Trade should be moved to set the Attorney-General in action. We gather that representation has been made to the Board of Trade, but neither the letter nor the reply appears in the appendix to this report. We rather think that Mr. Nelson will be unsupported in this view of the law, but we are not surprised that some soreness is felt about the defalcation-fund. The committee, however, may remember that they owe it mainly to members of the Corporation, and say as little about it as possible.

On the "burning questions" of the day, the possession of gas undertakings by Corporations, and the competition of local authorities, the committee have nothing to say. They feel, perhaps, the isolation of the City, and their hopes may be damped by the recollection of past failures. They express their disapprobation of a guaranteed dividend of 10 per cent., and make a statement which we rather think they would find it difficult to support—viz., that amalgamations have resulted "in increasing largely the expenditure" of the amalgamated companies. That no great economy has yet resulted may be perfectly true; but that expenditure, on account of working expenses (which alone is to be taken into consideration), has largely increased, we believe is the reverse of true.

The committee then recount all the efforts they have made to persuade past and present referees to fix a low sulphur maximum, and adopt a flat-flame test-burner. As regards sulphur, we cannot see that the City has anything to complain of. They may consider the maximum allowance of 20 grains too high, but what does it matter if the amount of sulphur at Bow and Beckton rarely exceeds 10 grains? We believe with the referees that the present limit is a fair one.

It is with some surprise that we see the committee calling in Mr. Patterson, the late referee, to advise them on the sulphur question. Of course, they were told in effect that if the companies would only use Mr. Patterson's patent processes, the sulphur might be reduced to an average of 4 or 5 grains. But the processes designed for urban gas-works have never been applied on a manufacturing scale, and although we have little doubt they might be used with perfect success, the present referees are right in refusing to fix a low maximum to compel the adoption of processes, the success of which has not yet been demonstrated.

The test-burner has been for more than two years a source of controversy between the Gas Committee and both late and present referees. The committee object to an Argand burner in general, and to the new London in particular. We fail altogether to appreciate the general objection to an Argand. The committee say that it throws a very large quantity of light precisely at right angles to the flame, so as to take effect on the photometer, and gives but little light in an oblique direction. Light thrown at right angles from a circular flame, we always thought, would be distributed equally all round. This objection made to the Argand would apply more strongly to the flat-flame burner, which the Gas Committee propose to substitute. Into the particular charges brought against the new London burner we need not enter. Past and present referees have decided that it does comply with the requirements of the Act of 1868; and the latter report that it is coming largely into use. The correspondence closes with a letter from the referees to this effect, dated July 24 of the present year. But the committee are not satisfied. They say that the results with the present test-burner are "illusory," which is just what Mr. Silber says, for he avers that his burner gives 20 per cent. more light with the same gas. Failing to impress their views upon the referees, the committee have concluded to have nothing more to do with them. They will go direct to the President of the Board of Trade, and induce him to take steps to remedy the evils complained of, "or, if necessary, to favour the introduction of a measure "to remedy the abuses existing under present legislation." And so ends a report which we rather think will not satisfy many in the Common Council. There is a want of "dash" in it; the tone is querulous; the conclusion lame, strongly contrasting with that of the Metropolitan Board.

When a powerful and intelligent Corporation like that of Liverpool set their minds on an object, its attainment is only a question of time and convenience. If, then, the Corporation decide presently that it will be to the interests of their constituents to acquire the Liverpool gas undertaking, we may be certain that the acquisition will in time be made. We regard the accusations brought against the company as, for the most part, unfounded. We believe it is true that they have a large sum of money on deposit, for which they pay no interest; but they have nothing more than the law allows them. The quality of the gas is well sustained, and the supply is most efficient, the price certainly not being exorbitant. We should have thought the Corporation had enough business on their hands at present in the proposed extension of their water undertaking; but when they are proposing to borrow, an additional million will be a

small matter to them. We shall be sorry to see the Liverpool United Company disappear; but there is no resisting the influence of the times. We are satisfied that consumers in Liverpool will be no better off. The Corporation will probably go in for profit to cover deficiencies on their water undertaking, and hence gas consumers will be doubly rated. We can only hope the ratepayers will well consider the matter before they consent to the promotion of a Bill to effect the purchase of the gas company. The question is shelved for the moment, but will certainly be brought up again. We notice that there is talk about the matter in the out-townships. Bootle and West Derby will presently want gas-works, and will ask to be independent of the Liverpool Town Council.

Gas affairs are not quite in a satisfactory state at Glasgow, but there is nothing in their condition to make the Corporation uneasy. The accounts for the year—which, by the way, give the receipts for 12 months, and the expenditure for only 11—show a deficiency of £14,377 18s. 10d. The price of gas is now 5s. 5d., but the average rate received for the year has only been 5s. 1d. It has been decided to maintain the price at its present rate for another year, which will, no doubt, enable the Corporation to recoup their loss. Of course, dear coal has been the chief cause of loss, and it would seem that only inferior cannel could be obtained, for we read that the yield of gas was only 8535 cubic feet per ton. There was, however, a diminished consumption of gas on the whole year, accounted for by the brightness of the weather and the shortened hours of labour. It is worth mentioning that the capital debt of the Corporation, in respect of the gas undertakings, has been increased, since they came into the possession of the Town Council in 1869, by the sum of £510,374. The total capital now engaged amounts to £1,044,639. It must be said, however, that the Corporation have, at the present time, works second in efficiency to none in the kingdom, and of a producing power far in advance of present requirements.

An esteemed correspondent sends us a statement, supporting the truth of the opinion we expressed last week, that, with diminished receipts under the average meter indication system, there might be greater gain to the gas company. The results, in the case he instances, are a striking confirmation of our view, and we have little doubt that, wherever the system is tried, similar, though perhaps not so good, results will be obtained.

The reports of half-yearly meetings, on the whole, continue to be satisfactory. The King's Lynn Company can only divide 1½ per cent. and add £20 to the reserve-fund. The Wrexham Company obtained a Provisional Order for an advance of price, and so, of course, got tied down to a low dividend. Their maximum for two years is 3¾ per cent., which the directors are fortunately able to pay. The Brighton (Old) Gas Company pay the maximum rate for the past half year. The Canterbury Gas and Water Company can only divide at the rate of 6 per cent. per annum. At Dover, the usual rate of 6½ per cent. is paid, and the directors are about to make reductions in the price of gas. The Hartlepool Gas and Water Company are better off, and can pay full dividends, as likewise do the Lancaster Gas Company. The South Shields Gas Company, less fortunate, only pay 4½ per cent. on their old capital, and 3½ per cent. on the new. The chairman of the Manchester Gas Committee, pressed to reduce the price of gas, states the Corporation are unable to purchase coal at any reduction of price, and hints that the price of gas may be raised. The Gas Committee of the Corporation of Carlisle have resolved to recommend the Town Council to make a reduction of 6d. per 1000.

Douglas, in the Isle of Man, has its little gas agitation. The gas company cannot divide 5 per cent.; but the Town Commissioners appear to think the company make too much money, and want the price of gas reduced.

It was said yesterday, in a daily contemporary, that the Chartered and Imperial Companies have resolved to reduce the price of gas on Jan. 1 next to 3s. 6d. per 1000 feet. We know nothing of the resolution which may or may not have been come to. Glad as we should be to see such a reduction, we cannot understand how it is possible, at the present time, to form such an estimate of the charges for the coming year as would justify the announcement, unless the directors have reconciled themselves to reduced dividends, trusting to Providence for the chance of making them up within the six years allowed. We shall, no doubt, soon hear a confirmation or denial of the truth of the report.

Water and Sanitary Notes.

If, as Mr. Bramwell stated at Belfast, the Metropolis Water Act, 1871, is practically inoperative as regards a compulsory constant supply, it is very satisfactory to know that by the voluntary efforts of some companies as much is being done as could be forced upon them by compulsion. We recently published a report showing what the New River Company have done, and what more they are willing to do, in the City of London. To-day we publish a report of Mr. Liddle, the medical officer of Whitechapel, which tells us what the East London Company are doing in his district. Mr. Liddle, if we remember rightly, has on former occasions written unfavourably of the water companies, and his testimony to-day is the more valuable. The northern part of Whitechapel has now a constant supply of water. The change gives satisfaction to every one, and we are especially pleased to learn that the expense of the alteration of fittings has not been nearly so great as was anticipated, and has been nowhere complained of. The reasons that the Act of 1871 has proved inoperative are mainly two—the apathy of the general public, who are really well satisfied with the present supply; and the want of action on the part of Local Boards, who shrink from the responsibility of putting their constituents to expense. Now that it is established that the expense is but small, perhaps the authorities will take courage. There is an unaccountable absence of plumbers on our Local Boards; we do not see one in any list of members we can put our hands upon at the moment, and it is perhaps to this fact that the failure of the Act of 1871 must be mainly ascribed.

A majority of the Town Council of Glasgow seem to have come to the conclusion that a bad bargain has been made in agreeing to pump and supply water for trade purposes from the Clyde at the rate of 5s. 6d. per 100,000 gallons when it will cost 6s. 6d., or probably more, to raise that quantity of water. Hence they are anxious to find an excuse for deferring the execution of the scheme, which by law must be completed by 1877. They have found one, and wish to postpone all action until the report of the Royal Commission on the purification of the Clyde is published. Since the consent of the millowners interested must be obtained for this delay, a committee of the Town Council has been appointed to confer with them. We are sorry to see Glasgow in this position with regard to the water supply, and cannot help thinking that, if proper precautions against waste were taken, the present sources of the Corporation would be ample for all purposes. Loch Katrine water, it is true, is very dear, and the Corporation could hardly supply for 5s. 6d. water which cost them 20s. We expect the millowners will prove inexorable, and, perhaps, that is the best thing that can happen for the Corporation.

A plan for the complete drainage of Oxford has at last been agreed upon by the Local Board, and the work will be immediately commenced. In time, a sewage farm, or filtration-ground, is to be added, but the consideration of the purchase of land for this purpose is, for the present, deferred. We notice, by the way, that the authorities at Merthyr Tydvil are talking of giving up "downward filtration," and taking to irrigation.

Lord Harrington is threatening the Town Council of Derby with legal proceedings for polluting the river Derwent with sewage. The Town Council are in no hurry to adopt any plan for purification, and we are not surprised. It is very easy for riparian proprietors to complain and put towns to great expense, but not so easy for these latter to decide on the plan best adapted to their circumstances. Let us wait and see what will be the results of the Northampton sewage farm, which the Sewage Committee of the Corporation prophesy will be a success, and the model irrigation farm of England. One really successful farm—that is, one which does actually purify sewage, is not a nuisance, and, at the same time, at least pays its expenses—would be a great encouragement to a more general adoption of the system.

The Corporation of Manchester will, it is reported, in the next session of Parliament, apply for power to increase their waterworks, and extend their limits of supply. Nothing is said about a readjustment of the water-rates, but we notice that at Salford, which gets its supply from the Manchester works, the Corporation are about to increase the price of water "in order to check to "some extent the large consumption for manufacturing pur-"poses." The extra charge is to be 6d. per 1000 gallons in excess of 3 millions per quarter, and no discount. This advance is not sufficient to drive manufacturers into the expense of sinking wells, so we anticipate that the demand on the Corporation will go on increasing until the day prophesied by Michelet arrives, "when that creaking wheel at Manchester will stand still." At Bradford there is also some talk of a readjustment of the water-rates. It would seem that Corporations are getting tired of unremunerative water undertakings.

There is still a great scarcity of water in many parts of the country, and, among others, the Corporation of Hereford have issued instructions for the prevention of waste.

A TREATISE ON THE SCIENCE AND PRACTICE OF THE MANUFACTURE AND DISTRIBUTION OF COAL GAS.

XXIX.

CARBONIZATION.

The fuel for retorts is generally estimated at the proportion it bears to the whole of the coke produced. In gas-works of limited capacity, supplying villages or very small towns, all this is required for heating the retorts; and, in some cases, it is insufficient for the purpose, and other fuel has to be used. But, as gas-works increase in magnitude, their position, in this respect, becomes more profitable; so that a work, properly constructed and economically managed, with a production of two millions and a half feet per annum, should sell 25 per cent. of the coke derived from carbonization, and a work making 20 million should sell 50 per cent., and in a work of 100 million the sales should not be less than 75 per cent. of the coke produced. Some establishments dispose of even more than this quantity; the metropolitan companies range from 81 to 63 per cent., according to the returns of quantities; but the difference in money value is comparatively small. The prices realized must vary according to circumstances, but often depend on the energy of the parties most interested. From our experience, coke will always find a market when, as the term is, the "business is pushed."

Instances are recorded where the carbonizing fuel does not exceed 13 per cent., this is so remarkably low as to leave a doubt about the matter; however, this small amount may arise from the manner in which the coke is sold, for, if the measure of this article be rigidly observed, it will tell very favourably in the per centage of fuel. We remember, years ago, at a certain metropolitan works, where they always sold their coke at 2s. per chaldron higher than at other places, the dealers considered it more advantageous to purchase here than elsewhere. The coke of the favoured company was no better than the others, nor did they have any advantage either in locality or otherwise; but, simply, their measure was more liberal than at other works, and this liberality of measure more than compensated for the increase of price. Such circumstances must necessarily influence the per centage of fuel.

The only true test of good working and economy in fuel is the money test—viz., the amount received for coke per ton of coal carbonized. Necessarily, the returns from this source must always vary according to local circumstances, but a great deal depends on the management. We know of a foreign works, held by an English company, where the returns from the sales of coke did not amount to 2 per cent. on the value of the coals. This, however, arose from a different kind of mismanagement, of which, let us hope, there are but few specimens; but in many instances, where there is no reason for doubt, the returns for coke do not amount to 20 per cent. of the cost of coal carbonized; and supposing the kind of coal to be used with which we started, and there to be no extraordinary extenuating circumstances, a gas-work only producing this amount for coke may be pronounced badly managed, the fault mainly consisting in the settings of retorts.

In well-conducted establishments the return for residual coke is equal to from 40 to 70 per cent. of the value of coal carbonized; frequently it is even higher than this, and in some few instances the sales of the coke pay for the coal purchased, and according to the balance-sheet of a gas company lately published in the JOURNAL OF GAS LIGHTING, the residuals realized 30 per cent. more than the cost of the coal carbonized, whilst the revenue for gas was equal to four times that price. Of course, these extraordinary results must have been peculiarly influenced by local circumstances, aided by most excellent management, and are highly creditable to the engineer of the company.

We are at present diverging from the subject directly under consideration, but as no better opportunity may occur to present these matters to the reader's attention, this must plead our excuse.

Let us now consider the difficulties in the sale of coke. These, no doubt, are numerous, particularly in the first establishment of a gas-work, and still more in warm climates, where the domestic fire is unknown. There it becomes part of the gas manager's duty to seek the means of creating a sale for this article, which otherwise is lost, or, what is the same thing, ordinary care not being observed in the retort-house, it is all consumed there. To promote a sale the coke must be adapted to suit the various industrial purposes of the locality; for steam-boilers, and even locomotives, should a railway exist in the neighbourhood; to kitchens, as a substitute for charcoal; in hotels, cafés, hospitals, and public buildings. For all these applications it is admirably suited, simply requiring some slight alteration in the construction of the furnace, stove, &c., and like gas, when once adopted and properly applied, the use of coke is rarely abandoned.

There are many continental towns and cities where, at the commencement of the operations of the gas company, the residual coke was a drug of little or no value, for the reason that there existed no means of employing it, and after protracted and continuous losses, it became necessary to find a remedy for this evil. For this purpose, in some instances, the company interested, constructed various kinds of kitcheners, and, when desired, combined these with stoves for warming apartments, adapted to the wants of all classes. These were produced at a cheap rate, and sold regardless of profit, the coke being sometimes given gratuitously in the first instance for trial. By these experiments coke was found to be more economical than other fuel; and as it is an attribute of human nature to appreciate whatever may be good and cheap, in a short time a market was established for all that could be produced. Thus coke becoming a direct necessity, its price was augmented, and the former drug constituted the principal source of most excellent dividends.

In our opinion it should become part of the gas manager's education, when going abroad, to understand the various applications of gas coke. From long experience, we know that a ready and remunerative sale can always be effected in any town sufficiently civilized to employ gas lighting, and at a price corresponding with the value of coal. It may not be a manufacturing town, requiring steam-boilers; there may be no railways, and, in consequence, no locomotives; but there will surely be establishments, public or private, where coke can be applied alike to the interest of the purchaser and seller, and only requiring knowledge and energy to cause it to be used.

We believe also that some of our readers at home may take a lesson from the foregoing remarks, and so remove the mountains of coke to be seen at their works. What can be more unsuitable and wasteful than the means of cooking and warming as applied in the dwellings of the metropolitan working classes? And might not those stoves and kitcheners referred to be applied to the humble dwellings, alike to the advantage of the occupants and the interests of gas companies? Let there be a good, cheap, and suitable stove made, and once appreciated, and there would cease to be any stock of coke at gas-works.

We now come to the deterioration of coke by storeage, sometimes inevitable, from a variety of causes. Where this residual is not sold readily, but is stacked, in the course of a short time a portion of it is resolved into breeze, and, as a natural consequence, the coke is reduced in size and value. This deterioration is considerable, depending on various circumstances, as the quality or hardness of the coke, the height of the stack, the kind of weather it is exposed to, and the time it remains on hand.

The importance of a rapid sale of coke—that is, sold as produced—can hardly be over-rated. The amount of loss sustained by stacking, for reasons stated, can only be matter of conjecture; but we believe there is no exaggeration in saying that it is more profitable, taking labour and other things into consideration, to dispose of coke as produced at 12s. than to stack it for six months and then sell it at 16s. per chaldron. It is better to sell it under the conditions and at the price stated, rather than stack it for twelve months, and then obtain 18s. per chaldron for it, unless, indeed, breeze in the locality may have a most favourable market, and can be sold at an extraordinary price, which would alter the conditions.

Before the establishment of railways in France, fuel of every denomination was exceedingly dear, wood and charcoal being that generally employed for culinary and other purposes. This excessive price gave rise to the manufacture of an artificial charcoal, by mixing sawdust, chips of wood, and such like material, with a small portion of tar, which mixture was compressed into cylindrical blocks of about 6 inches long and 2 inches diameter. These were afterwards baked, so as to expel all the volatile matter, when a substance was produced identical in appearance and nature with charcoal, and was called "Charbon de Paris," and made the fortune of the first manufacturers.

The large accumulation of breeze at the French gas-works opened another source for developing this industry, the breeze being treated in a similar manner to the sawdust, but manufactured in large blocks of the size of ordinary lumps of coal, to which the fuel bore some resemblance, and this became, and is now, an important and economical fuel for the poorer classes of the community.

This application of breeze seems to have had but little attention in England; and, probably, in localities where it has no sale, there are hundreds of tons of it thrown away annually; and by this misapplication of so much that might be rendered useful and valuable, a great wrong is committed, for not only may this breeze—even the smallest kind—be converted into fuel, but, by preparing it as indicated, it may be used for heating the furnaces of gas-works, thereby economizing about its weight of coke, which will command a ready sale.

We are only aware of this method of applying breeze to heat retorts being practically carried out in England at the Dover Gas-Works, under the direction of Mr. Anderson; but it is to be hoped its application is more general than supposed. By the plan there adopted the material is not baked, but is used in the furnaces as it comes from the compressing machine, and in charging the furnace it is better to intermix it with the coke, or to have the doors of the furnace arranged so as to admit air for its proper combustion. In localities where breeze possesses little value these means of employing it are of the greatest importance.

When tar is an unmarketable commodity, it may be employed with great advantage in heating retorts. The most perfect method has lately been described by a correspondent in the JOURNAL, and as we can suggest no improvement in the process described, the reader is referred to page 396 of the last volume.

An essential in carbonization is the means of obtaining the desired degree of heat for the retorts. For this object a draught to furnaces is indispensable, and whenever the flame issues from the sight-holes of a setting, either the damper is too much closed, or the lateral flue may be stopped. Should the whole of the beds be so affected, the main flue may be stopped or too small, or the stack or shaft not of sufficient capacity. It is essential also to the production of good heat, that the fire-bars of furnaces should always be clear, so as to allow a free passage of air to the fuel. When ordinary good coke is used, the slag or clinker in furnaces requires to be removed about once in every twelve hours; besides this, the bars should be cleared at intervals by a suitable rake from underneath.

For the purpose of economizing fuel in the furnaces, the proper control of dampers is indispensable; and if this be neglected, strict economy cannot be attained. The damper should be so adjusted

that a sufficiency of air is allowed to pass to supply the fuel in the furnace, and any excess beyond this is wasteful and prejudicial.

Where a proper draught exists, the opening at the damper is very small—and the smaller the better, as this is the point where the fuel is prevented from passing away uselessly into the atmosphere. To illustrate the importance of this question, let us suppose the opening of the damper sufficient for a setting of retorts to be 6 inches by 2 inches, or 12 square inches, and with this the retorts to be properly heated at an ordinary expense of fuel. If, by carelessness or ignorance, the damper be open to the extent of 4 inches, giving 24 square inches at this point instead of 12 inches for the passage of the heated air, then the result would be a very great increase in the fuel required for the furnace, without any good purpose—in short, it would be literally permitting the money value of the extra fuel required to fly off by the chimney, and to be for ever lost. Although not done in practice, engineers may, at some future period, understand the desirability of placing dampers on the main flues, and so prevent the periodical issue of the flame from the stack occasioned by atmospheric influence.

Coals intended for gas making should always be well protected from the rain, otherwise they are deteriorated considerably, alike for the purposes of gas and coke; the first being diminished in quantity and quality, and the latter in size. Cannel readily dries when placed before the benches, and in a short time is suitable for charging; slack coal, on the contrary, retains the moisture in it for a long time, and, when charged in a wet state, the steam produced carries off a considerable quantity of heat, so that an increase in the production of tar and diminution of the gas is the consequence. According to the experience of the late Mr. Bannister, whose experience and intelligence were well known, the carbonization of wet coal is one of the causes of the production of naphthaline.

It has been supposed that in the distillation of wet coal, a large quantity of hydrogen is produced, and that thereby the volume of gas is increased, and the illuminating power thereof diminished. This opinion, however, is founded on error, as it is evident that at the commencement of a charge the heat of the retort is not sufficiently high to decompose the steam arising from the wet coal, and that, under these circumstances, less gas and more tar will be the result.

In small works the coke is drawn from the retorts at the end of a charge into iron barrows, and is wheeled away to the yard or spreading floor. In larger works a line of railway usually extends throughout the length of the retort-houses, close to the benches. On this railway run iron waggons of a capacity suited to receive the coke produced in the respective settings. These are then drawn away to the coke-store, where their contents are tilted into a pit of about 3 feet in depth, and extinguished, ready for sale or stacking.

In former times, when wet lime purifiers were in use, the lime obtained therefrom made an excellent luting for the mouthpieces of retorts; but with dry lime purification the spent lime is only thus available after a considerable exposure to the atmosphere. It then requires to be well saturated with water; and this process, involving, as it does, much inconvenience and trouble, produces only a very indifferent material for the purpose. In the absence of a suitable loam in the neighbourhood of the works, fresh lime may be employed with advantage for luting. It will be found superior, and, in the main, more economical, than the material from the dry lime purifiers.

The employment of luting for retorts seems, however, likely to be superseded by Morton's air-tight lids, which are among the most important of modern appliances in the art of gas manufacture. These lids are adjusted in such a manner that, when fixed on the mouthpieces, they are gas-tight, without the aid of either luting or packing. The lid is hinged to the mouthpiece, and opens and closes with the greatest facility. It is secured by a simple lever and eccentric, and the promptitude and ease with which it is operated compares favourably with the labour and time required in the old system of luting. Nor is this saving the only advantage. There is economy in the practice, and there is no chance, as formerly, of an admixture of the luting material with the coke, which detracted much from its appearance. Care when cleaning the mouthpieces is the only precaution necessary, as, from custom, stokers are apt to employ the shovel on the edge of them, which, of course, is prejudicial. With attention to this matter the use of these lids is completely successful.

Our concluding observations on this part of our subject relate to matters of detail. In the conduct of gas-works, everything that is, or may be construed into, a nuisance should be avoided. Amongst these is the smoke which inevitably occurs on the drawing of the retorts, and this may be considerably diminished by raking out the tar which collects in the mouthpiece at each charge. At the same time, to prevent obstruction, a bent auger should be passed up the ascension-pipes. The coal, when charged into the retorts, should be rudely levelled, and that portion of the coal not immediately in contact with the heated part of the retort should be pushed back to that point. All these operations, simple in themselves, are nevertheless essential to economical working; they occupy but little time, and when once systematically adopted, the work goes on as smoothly as can be desired.

(*To be continued.*)

NEWARK GAS COMPANY.—The half-yearly meeting of shareholders was held on Saturday, Aug. 29, when the directors report and statement of accounts were approved, and a dividend at the rate of 5 per cent. per annum (less income-tax) on class B shares was declared, and a dividend at the rate of 6 per cent. on class A and new ordinary shares was also declared. Mr. Brewster and Mr. Brooks, two of the retiring directors, and Mr. James Knight, one of the retiring auditors, were unanimously re-elected.

Communicated Article.

THE PRINCIPLE OF THE VALUATION OF GAS COAL.

By D. A. GRAHAM, Stalybridge.

(*Continued from p. 229.*)

A Method of Finding the Illuminating Power, and the Return per Ton a Coal or Cannel will Produce: that Coal or Cannel whose Return per Ton and Illuminating Power it is desired to find, being used along with a Coal or Cannel whose Return per Ton, Illuminating Power, and the Per Centage of it used in the Mixture, have previously been ascertained.

In the preceding paper we showed how the values of x, y, and z might be ascertained by various methods of applying the formulæ

$$d\,H + c\,F : 100 :: c\,F : y,$$

and we selected an example involving the solution of these three unknown quantities, whose terms were expressed by the following equation:—

$$(9000 \times 12 \times x) + (10{,}000 \times 22 \times y) = 18 \text{ candles} \times 100 \times z.$$

And the solution of this equation was found to be—

$$(9000 \times 12 \times 42{\cdot}55) + (10{,}000 \times 22 \times 57{\cdot}45) = 18 \times 100 \times 9572{\cdot}5.$$

Now, in the following case, let us assume that all the terms representing the values of the coal used ($9000 \times 12 \times 42{\cdot}55$), and all the values of the products of the mixture ($18 \times 100 \times 9572{\cdot}5$) are known, and that only one of the terms of the quantity ($10{,}000 \times 22 \times 57{\cdot}45$) is known—namely, the per centage of cannel used (57·45), and let it be required to find the return per ton and the illuminating power of this cannel from the other known terms of this equation.

In this equation let R equal the return per ton this cannel will produce, and let its illuminating power be represented by the letter I; then the following equation will give expression to the known and the unknown values it is desired to ascertain:—

$$(9000 \times 12 \times 42{\cdot}55) + (\mathrm{R} \times \mathrm{I} \times 57{\cdot}45) = 100 \times 18 \times 9572{\cdot}5$$

Now, the value of R (the return per ton this cannel will produce) will evidently be the value which will be found on the solution of the following equation:—

$$\begin{aligned}
(9000 \times 42{\cdot}55) + (\mathrm{R} \times 57{\cdot}45) &= 100 \times 9572{\cdot}5 \\
\text{Or } (382{,}950) + (\mathrm{R} \times 57{\cdot}45) &= 957{,}250 \\
\therefore \quad \mathrm{R} \times 57{\cdot}45 &= 957{,}250 - 382{,}950 \\
\therefore \quad \mathrm{R} \times 57{\cdot}45 &= 574{,}300 \\
\therefore \quad \mathrm{R} &= \frac{574{,}300}{57{\cdot}45} \\
\therefore \quad \mathrm{R} &= 10{,}000 \text{ cubic feet nearly.}
\end{aligned}$$

Substitute this value of R (10,000) for its symbol in this equation, and it becomes

$$(9000 \times 12 \times 42{\cdot}55) + (10{,}000 \times \mathrm{I} \times 57{\cdot}45) = 100 \times 18 \times 9572{\cdot}5,$$

an equation containing only one unknown quantity (I)—the illuminating power this cannel will produce.

$$\begin{aligned}
\text{Then } (4{,}595{,}400) + (574{,}500 \times \mathrm{I}) &= 17{,}230{,}500 \\
\therefore \quad 574{,}500 \times \mathrm{I} &= 17{,}230{,}500 - 4{,}595{,}400 \\
\therefore \quad 574{,}500 \times \mathrm{I} &= 12{,}635{,}100 \\
\therefore \quad \mathrm{I} &= \frac{12{,}635{,}100}{574{,}500} \\
\therefore \quad \mathrm{I} &= 22 \text{ candles.}
\end{aligned}$$

Therefore this cannel will produce 10,000 cubic feet of 22-candle gas.

We shall conclude this chapter with another illustration.

A mixture of 50 per cent. of coal and 50 per cent. of cannel produces 9777 cubic feet of 18·50-candle gas, new "London" burner, equal 17 candles old burner, and the cannel, which we shall call W Y, was found to produce 10,033 cubic feet of 21·3-candle gas. How much did this coal (W. R. and R.s') produce to the ton, and what was its illuminating power?

Let r = the return per ton the coal would produce, and let i = the illuminating power of the gas it would produce; then—

$$(r \times i \times 50) + (10{,}033 \times 21{\cdot}3 \times 50) = (9777 \times 18{\cdot}5 \times 100)$$

First find the value of r (the return of the coal per ton).

$$\begin{aligned}
(r \times 50) + (10{,}033 \times 50) &= 9{,}777 \times 100 \\
\therefore \ (r \times 50) + 501{,}650 &= 977{,}700 \\
\therefore \ r \times 50 &= 977{,}700 - 501{,}650 \\
\therefore \ r \times 50 &= 476{,}150 \\
\therefore \quad r &= \frac{476{,}150}{50} \\
\therefore \quad r &= 9{,}523 \text{ cubic feet.}
\end{aligned}$$

Restate the original equation, substituting the value of r for the symbol; then—

$$\begin{aligned}
(9523 \times i \times 50) + (10{,}033 \times 21{\cdot}3 \times 50) &= 9777 \times 18{\cdot}5 \times 100 \\
\text{Or—} \quad (476{,}150 \times i) + 10{,}685{,}146 &= 17{,}087{,}450 \\
\therefore \ 476{,}150 \times i &= 17{,}087{,}450 - 10{,}685{,}146 \\
\therefore \ 476{,}150 \times i &= 6{,}402{,}304 \\
\therefore \ i &= \frac{6.402{,}304}{476{,}150} \\
\therefore \ i &= 13{\cdot}4 \text{ candles, new "London" burner.}
\end{aligned}$$

Or, deducting 1½ candles for Sugg's new "London" burner, this coal would produce 12·9-candle gas by the old unconed gas-burner.

This coal therefore produces 9523 cubic feet, of 13·4-candle gas new "London" burner—results which nearly approximate to those obtained when this coal was tested separately in a testing apparatus.

In a future paper we shall formulate this rule for finding these values, which we believe to be new; they having never appeared in any publication with which we are acquainted.

In the preceding chapters we have shown how the values of the per centages of cannel and coal requisite to produce a quality of gas intermediate to the quality which either of them would separately produce can be determined, and how, from multiplying these per centages by the returns per ton of each, adding these multiples of their per centages, and casting off two decimal points from their sum, the return per ton the mixture will produce can be obtained.

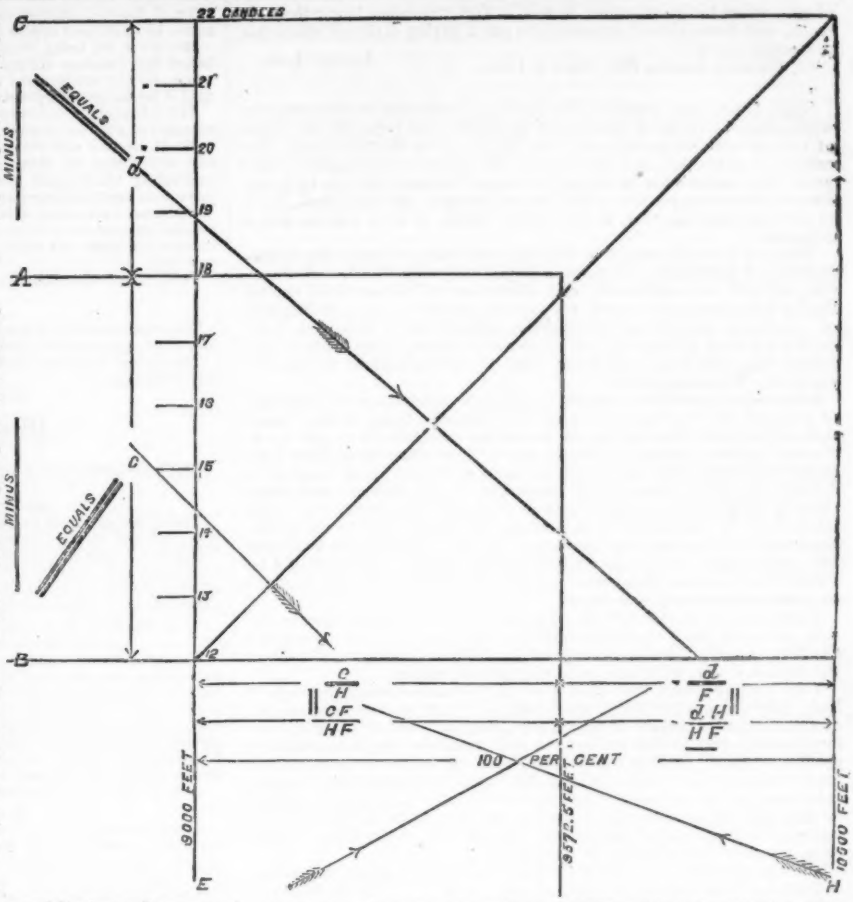
In this division of the subject we purpose to show how the formulæ

$$d\,H + c\,F : 100 :: c\,F : y$$

can be applied to ascertain the value of the return per ton of the gas obtained from any mixtures of different qualities of coal and cannel, these several mixtures, perhaps, giving different returns per ton, but producing the same quality of gas; and we shall endeavour to ascertain from this application of the formulæ (the values of two of the terms of one of the mixtures being known) whether the difference of the differences, or some other quantity, is the true measure of the differences of the value of the production and illuminating power a coal or cannel will produce.

This diagram will show what values are required to be ascertained, and how the formulæ here and previously given may be applied to find them.

In a previous chapter, we valued the coals and cannels after having first found these values for a coal producing 10,665 cubic feet of 14·3-candle gas, and a cannel producing 10,875 cubic feet of 24·25-candle gas. For obvious reasons, we shall adhere to the coal and cannel first selected for standards of comparison, comparing the results we are about to obtain with those we formerly obtained when we valued from the difference of the differences.



First, then, let it be ascertained what per centages of this coal and cannel will be requisite to produce, say, 18-candle gas, and what return per ton those per centages of this coal and cannel will produce?

$$63{\cdot}2 \times 20\text{s.} = 12{\cdot}64$$
$$+\ 36{\cdot}8 \times 30\text{s.} = 11{\cdot}04$$
$$23{\cdot}68 = 23\text{s. } 8\text{d.}$$

If, therefore, 23s. 8d. represented the value of this mixture, what would be the values of the coal and cannel used to produce the same quality of gas in the two following mixtures, the afore-mentioned coal or cannel being used as one of the quantities of these mixtures requisite to produce that particular quality of gas?

1st Example.—A coal produces 9000 cubic feet of 12·5 candle gas. What per centage of this coal would be required to manufacture 18-candle gas when used along with the cannel producing 10,875 cubic feet of 24·25-candle gas?

$$18 \begin{cases} -\ 12{\cdot}5 \\ -\ 24{\cdot}25 \end{cases} \times \begin{matrix} 6{\cdot}25 \\ 5{\cdot}5 \end{matrix}$$

So that a mixture of $\frac{6{\cdot}25}{9{,}000} + \frac{5{\cdot}5}{10{,}875}$ will produce 18-candle gas, and the sum of these numerators will equal 679 of coal + 495 of cannel = 1174 of both.

And $1174 : 100 :: 679 : x \therefore x = 57{\cdot}8$, and 100 − 57·8 per cent. of coal = 42·2 per cent. of cannel.

$$18 \begin{cases} -\ 14{\cdot}3 \\ -\ 24{\cdot}25 \end{cases} \times \begin{matrix} 6{\cdot}25 \\ 3{\cdot}7 \end{matrix}$$

Therefore $\frac{6{\cdot}25}{10{,}665}$ of coal + $\frac{3{\cdot}7}{10{,}875}$ of cannel will produce 18-candle gas.

The numerators of the fractions $\frac{6{\cdot}25}{10{,}665} + \frac{3{\cdot}7}{10{,}875}$ will equal 67·96 + 39·46, and their sum will equal 107·42.

$$\therefore\ 107{\cdot}42 : 100 :: 67{\cdot}96 : x \therefore x = 63{\cdot}2$$
$$36{\cdot}8$$
$$100{\cdot}0$$

$\therefore$ 63·2	×	the coal producing	10,665	= 6,740·280
And 36·8	×	the cannel „	10,875	= 4,002·000
100·0	per cent. of the mixture will produce			10,742 cubic feet;

results which exactly agree with those obtained from the measurement of the diagram.

Now, it will be remembered that we based the estimates on the assumption that the coal cost 20s. delivered, and that the cannel cost 30s. delivered, so that the mixture would cost 23s. 8d.—

And 57·8	per cent. coal	× 9,000	= 5202 cubic feet.
And 42·2	„ cannel	× 10,875	= 4589 „
100·0	per cent. will produce		9791 cubic feet.

2nd Example.—A coal produces 10,665 cubic feet of 14·3-candle gas; and a cannel (Duke of B——rs') produces 9676 cubic feet of 20·3-candle gas. What per centages of each must be used to produce 18-candle gas, and what will be the return per ton of the sum of these per centages?

$$18 \begin{cases} -\ 14{\cdot}3 \\ -\ 20{\cdot}3 \end{cases} \times \begin{matrix} 2{\cdot}3 \\ 3{\cdot}7 \end{matrix}$$

And the numerators of $\frac{23}{10{\cdot}665} + \frac{37}{9676}$ will equal 222 of coal + 394 of cannel, their sum being 616.

$$\therefore\ 616 : 100 :: 394 : 64 \text{ of coal, and } 100 - 64 = 36.$$

$\therefore$ 64	per cent. coal producing	10,665	cubic feet =	6,825·6 cub. ft.
And 36	„ cannel „	9,676	„ =	3,383·3 „
$\therefore$ 100	per cent. will produce			10,209 cub. ft.

(To be continued.)

Correspondence.

THE AVERAGE METER SYSTEM.

Sir,—In your impression of the 1st inst., speaking of the average meter indication system and the contract plan of supply, you say, "If the receipts be smaller under the new arrangement, we believe the ratio of gain will be greater." The provincial company I represent having tried the average meter system for 12 months under the most stringent conditions which an intractable Local Government Board could devise, I can fully support your view. The street-lamps are now lighted about half the contract number of hours; 4-feet regulators have been substituted for 5-feet ordinary bat's-wing burners; every whimsical freak is carried out to save gas by hook or by crook. Instead of the town being one of the best lighted in the county, we have now the townspeople and tradesmen incessantly complaining of the unprotected state of property in the night, and the interference with business through the darkness of the streets in the evening. The company will receive about half as much money as they did under the contract system, but even then we have nothing of which to complain. The public suffer in comfort and convenience, and pay full price for a miserably inefficient supply, but the end our local gas reformers aimed at—injuring the company—has not been answered. Their curse has turned into a blessing. For each 1000 feet of gas consumed we receive 1s. 4d. beyond the highest price realized under past contracts, so that the additional profit is a very consolatory fact under the present conditions of the gas trade.

Sept. 2, 1874. A Country Secretary.

BARNET DISTRICT GAS AND WATER COMPANY.

Sir,—In the report of the general meeting of the shareholders of the above company, contained in your last impression, it appears that I said "that the capital of the company was altogether out of proportion to the revenue; it was, in fact, ten times *larger than it should be*, and it was almost impossible to get a paying dividend while this proportion existed."

What I said was "that the capital of the company was altogether out

of proportion to the revenue; it was, in fact, ten times larger than *the rental*, and it was almost impossible to get a paying dividend while this proportion existed."

ALFRED LASS.

60, *Cornhill, London, E.C., Sept.* 3, 1874.

SIR,—I read your report of the half-yearly meeting of this company with mingled feelings of amusement and regret, and hope, for the credit of the gas world in general, and the benefit of the shareholders of this concern in particular, that the why and the wherefore the capital of that part of the undertaking belonging to the gas business amounts to nearly eleven times the gas-rental will be ascertained and published, for I cannot help thinking that, as the matter stands, it is a scandal and a disgrace.

This is not an old concern which came into existence when the manufacture and distribution of gas was imperfectly understood, and, therefore, entitled to consideration and allowances on the score of capital having been excusably wasted, nor is it old enough to claim indulgence on account of unavoidable dilapidations, neither can it be said that the capital has been unduly swelled by provision having been made for the future, the plant being only barely sufficient for the present demand for gas in the district supplied.

It is, indeed, a modern creation, brought into existence with a flourish of trumpets by City men, who profess to "know a thing or two," more than one of them having figured somewhat prominently in gas agitations in London, assuming to know much better than those who have borne the burden and heat of the day as to what could and ought to be done in supplying cheaper and better gas to the citizens; and while there is no doubt a peculiar fitness in the retribution which has overtaken them in this matter, it is, I venture to submit, due to the shareholders of the amalgamated companies, and the new directors who have had neither part nor lot in "piling up the agony," that it should be known *how* the money has been—spent, I was going to say, but it would be more correct to say—*got rid of*.

There need be no difficulty in doing this; a competent surveyor would soon make a detailed structural valuation which would show how much has been expended, and leave exposed in all its nakedness the portion of the capital, if any, which has been scattered or wasted.

I say nothing about the other part of the undertaking, although it looks very awkward to find a water company with an expended capital of £36,036 and a rental of only £1280, for there is no knowing how much money may be thrown down a well, nor how long it may take to get it out again. In this case it seems that one well was not sufficient for a "sinking-fund" or for sinking the funds, so another must be provided and suitable premises built, on *a hill*, out of the way of water, so that the well-sinkers might have a dry hole to work in, and that water, at least, might not impede the familiar and, to the Barnet Company, the favourite operation of sinking.

The old saying has it, "Let well alone," and now it seems the verdict at Barnet is—let the Finchley well alone.

R. P. SPICE.

21, *Parliament Street, Westminster, S.W., Sept.* 5, 1874.

Legal Intelligence.

BRADFORD BOROUGH POLICE COURT.—SATURDAY, AUG. 29.

(*Before Mr.* J. FARRAR *and Mr.* HENRY MITCHELL.)

UNLAWFULLY APPROPRIATING THE WATER OF THE CORPORATION.

William Haggas, manufacturer, of Keighley, was charged by the town-clerk, (Mr. M'Gowen) with having unlawfully taken water, the property of the corporation, from a place in Swaine Street, Bradford. Defendant made no appearance, but was represented by his son.

The TOWN-CLERK said he had summoned the defendant before their worships because he had not made arrangements with the corporation for taking water to supply his premises in Charles Street, Bradford, but had got the water from a tap belonging to some one else. The practice of taking water in that way might have a very ugly name applied to it, but he preferred to use the word "taking," and for each transaction of that description the defendant was liable to a penalty of £10. The water was used by defendant in an office of his at 24, Charles Street, and was taken from a warehouse, near at hand, belonging to Mr. M'Kean. It was almost impossible for the officers of the corporation to be aware of every offence of this kind, but they had instructions from the corporation to bring all such offenders before the bench.

Mr. *Haggas*, jun., admitted that a servant of theirs had taken this water to sprinkle the floor with before sweeping it. They only used the water for that purpose.

The TOWN-CLERK said the practice had become very common.

Mr. *Crabtree*, water-fittings inspector, said it would have been more prudent on the servant's part if he had employed a lesser vessel to take the water in if he had only wanted it to sprinkle the floor with. The vessel he had used would hold about two gallons of water.

The TOWN-CLERK said the water was supplied for a very small sum. The fact was that in this building there were twelve tenants, and not one of them had arranged with the corporation for a supply of water. It was rather too much to expect that any one would give credence to the idea that among the whole twelve tenants no one used water. He did not make any offensive observations, but he was quite sure that the lads would get water from somebody else if it were not forthcoming on their master's premises.

The CHAIRMAN hoped Mr. M'Gowan would be satisfied by the bench inflicting such a penalty as would make Mr. Haggas aware that he had done wrong. He then fined defendant £1 and 12s. costs.

A similar charge was preferred against *John Croft*, a manufacturer of Leeds, and adjourned to the 12th of September.

CAMBRIDGE BOROUGH POLICE COURT.—THURSDAY, SEPT. 3.

(*Before Mr.* C. LESTOURGEON.)

EMBEZZLEMENT AT THE CAMBRIDGE GAS COMPANY'S OFFICE.

Peter Haslop, clerk, and *Henry Ingram*, cashier, were charged with embezzling moneys of their employers, the Cambridge Gas Company.

Mr. H. BROWNE prosecuted, and Mr. COCKERELL defended.

Mr. *W. Wood*, the company's manager, explained the method of keeping the accounts in the office, and the duties of the prisoners respectively.

Several of the customers of the company deposed to the payment of various sums to Haslop, which it was stated had not been handed over to the prosecutors.

Mr. COCKERELL said he believed when the case came to be fully investigated it would turn out that there was an utter absence of criminality on the part of Haslop, who had been 20 years clerk in the gas office, and bore an irreproachable character. He belonged to a most respectable family, and did not at all fear an investigation before a jury.

Mr. H. BROWNE said he was desired to leave the case entirely with the magistrate; he should not oppose bail.

Mr. *Wood*, on being recalled, said, in answer to Mr. Cockerell, that when before the directors Haslop said he could not tell what had become of the money he had received and not accounted for. He believed he denied having used it for his own purposes.

The defendant, who reserved his defence, was committed for trial. Bail was accepted of £200 in his own recognizance, and two sureties in £100 each.

Mr. H. BROWN said the case against Ingram was the same as in the previous one, except that the items and dates were different. There was a charge of embezzling 12s. 6d. paid by Ann Hyde, on the 12th of November, 1873, and there were several other cases.

Witnesses were called who proved payment of various sums of money to the accused on account of the company, and Mr. *Wood*, recalled, said he had looked through the books and failed to find that the amounts had been paid to the gas company.

The accused was remanded, on his own recognizance, till the following day.

FRIDAY, SEPT. 4.

The examination of *Ingram* was again proceeded with, and two or three witnesses were produced who had paid money to him at the company's office.

The accused was then committed for trial, the same bail being taken as in the case of Haslop.

Miscellaneous News.

THE CORPORATION OF THE CITY OF LONDON AND THE GAS QUESTION.

REPORT OF THE GAS COMMITTEE.

The following report by the Gas and Water Committee of the Corporation was presented to the Common Council on July 16. It was then resolved—"That the consideration thereof be adjourned, and it is ordered that the report be printed, and a copy sent to every member of this court." The report was accordingly published during the last week. It is signed by Mr. G. Shaw, the chairman, and 13 other members of the committee.

To the Right Honourable the Lord Mayor, Aldermen, and Commons of the City of London, in Common Council assembled.

We whose names are hereunto subscribed of your Gas and Water Committee, to whom, on the 11th day of December, 1873, it was referred to consider the letter of The Gaslight and Coke Company, stating that a further increase in the price of gas is necessary to meet the extraordinary expenses of the year 1874 and payment of the company's authorized dividend, and inquiring whether the corporation is disposed to agree with an alteration in price, in pursuance of the 70th section of the City of London Gas Act, 1868, and to whom it was also referred, on the 15th January last, to consider the following resolutions of the wards of Aldgate and Bishopsgate, viz:—

ALDGATE WARD, LONDON.

At a wardmote held on Monday, the 22nd day of December, 1873, before the Right Honourable the Lord Mayor, M.P., alderman of the ward,

It was resolved unanimously—That this wardmote hears with much regret that the gas company supplying the City have given notice that it is their intention to seek powers to increase the price of gas, and requests the Court of Sewers to use its best efforts to oppose the same.

BISHOPSGATE WARD.

At a wardmote held at the School Room, in Bishopsgate Churchyard, on Monday, the 22nd day of December, 1873, before the Worshipful Thomas Scambler Owden, Esq., alderman of the ward,

It was resolved—That this wardmote is gratified to learn that it is the intention of the corporation, the Commissioners of Sewers, and the Metropolitan Board of Works to oppose any application to be made by the gas companies for power to increase the price of gas.

And to whom, on the 26th day of March last, was also referred the following resolution of the vestry of St. Luke, viz.:—

ST. LUKE'S, MIDDLESEX.

At a meeting of the vestry of the above-named parish, held at the Vestry Hall, City Road, on Tuesday, the 3rd day of March, 1874, at three o'clock p.m.,

It was resolved—That notice having been given of The Gaslight and Coke Company applying to the Board of Trade for a revision of the illuminating power and the price of gas, the vestry object most strongly to any increase whatever in the price, and that a copy of this resolution be sent to the Metropolitan Board of Works, the before-named company, the Board of Trade, and the Corporation of the City of London.

And to whom, on the 30th of April last, it was likewise referred to consider the following resolutions of the ward of Bishopsgate:—

BISHOPSGATE WARD.

At a ward meeting, held at the School Room, in Bishopsgate Churchyard, on Wednesday, the 22nd day of April, 1874, before the Worshipful Thomas Scambler Owden, alderman of the ward, to consider the high price of gas, and to adopt such measures as may be deemed advisable thereon,

Resolved—That this meeting views with great dissatisfaction the advanced price charged for gas under the Act of Parliament, which is severely felt by all consumers, and considers that such increase in price is both unfair and unreasonable, particularly as in some parts of London and the country gas is sold at a profit at 3s. per 1000 feet;

Resolved—That this meeting is of opinion that the Gas Act securing a minimum dividend of 10 per cent. to the shareholders operates unjustly on the consumers, and should be repealed; and further, the supply of gas and water should be vested in the municipal and local authorities, which is now the case in many of the towns of the United Kingdom.

Do certify that we duly proceeded therein, and having received a communication from the Board of Trade, dated the 10th of January, 1874, stating that they had appointed Francis Savage Riley, Esq., barrister, William Odling, Esq., F.R.S., professor of chemistry, and William Pattison, Esq., actuary, to be commissioners for the purpose of revising the scale of illuminating power and price of gas supplied by The Gaslight and Coke Company, we intructed Mr. Solicitor to take the necessary steps with respect thereto, and he has since reported to us as follows, viz.:—

To the Worshipful the Gas and Water Committee.

Gentlemen,—I have the honour to report that the commissioners appointed by the Board of Trade to consider the application of The Gaslight and Coke Company for a revision of the price of gas for the year 1874, made their certificate on the 31st ultimo, by which they determined that the illuminating power should remain at 16 candles, but that the price chargeable as from the 1st of January should be at the rate of 3s. per 1000 cubic feet, being an addition of 1s. 3d. to the price fixed by the Act of 1868, and an addition of 8d. to the price allowed for the year 1873.

It appears from the audited accounts of The Gaslight and Coke Company for the year 1873, that that company has paid the sum of £5000, being the amount payable for the year in respect of Higgs's defalcations, out of the profits of the company over and above the division of their full dividend at the rate of 10 per cent.

It also appears that they have spent a sum of £5024 in respect of the expenses of the strike which happened in the year 1873, and the company have not carried 1 per cent. to the credit of the insurance-fund, or anything on account thereof.

As far as the defalcation sum is concerned, it was clearly intended by the scheme for the amalgamation of the Great Central Gas Company with The Gaslight and Coke Company that the gas consumers should not bear any portion of Higgs's defalcations, unless the company could at the statutable rate of 3s. 9d. earn their full dividend and make good their insurance-fund, in which case out of any surplus profits the defalcation might have been paid, but in the eventswhich have happened the gas consumers are really wiping off this defalcation out of theenhanced price of gas. If this appropriation

of the net profits of the company is illegal either in respect of the expenses of the gas stokers strike, or the defalcation account, or both, it is a matter which the Attorney-General, as representing the public, ought to have set right, and it is for your committee to consider whether the matter should not be represented to the Board of Trade, with a request that the matter should be referred to the Attorney-General. I enclose the official certificate of the commissioners and the accompanying memorandum.

I have the honour to be gentlemen, your most obedient servant,

Guildhall, April 22, 1874. T. J. NELSON, City Solicitor.

This certificate and the memorandum of Her Majesty's Commissioners are hereunto appended.

In accordance with the recommendations contained in the report of the City Solicitor, we have directed that a representation should be made to the Board of Trade upon the matter, with a view to a remedy being applied.

Your committee cannot but feel that the operation of the Acts of 1860 and 1868 has been extremely detrimental to the interests of the public. As expressed in the resolution of the ward of Bishopsgate, the securing an actual minimum dividend of 10 per cent. to the shareholders, in addition to the 1 per cent. for insurance, operates unjustly towards the consumer, and the power of amalgamation, which it was thought might be beneficial as likely to diminish expenses, has, on the contrary, resulted, when carried out, in increasing largely the expenditure of the amalgamated companies, and has also increased the difficulty of obtaining evidence of mismanagement or extravagance.

Further, the appointment of gas referees under the 29th section of the Act of 1868 has not produced the result which was anticipated. It was expected that these gentlemen, who under their appointment were to be competent and impartial persons, would have carried out the important functions which devolved upon them in such a manner as would have satisfied the requirements of the public without doing injustice to the interests of the gas companies; and yet it was only after being repeatedly urged to settle the question of the maximum for sulphur impurities other than sulphuretted hydrogen, in a lengthened correspondence extending over a period of more than two years (a copy of which has been sent to the members of the court), that the gas referees fixed a maximum of 20 grains for suburban works, and left the question of urban works without fixing any limits whatever; a result which was anything but satisfactory to your committee, or a guarantee for the protection of the public.

As it has been clearly demonstrated that in suburban gas-works, with proper attention on the part of the companies, that the amount of sulphur can be reduced very considerably below that fixed by the gas referees, we determined to make a further application to the Board of Trade to move them to urge the gas referees to reconsider the question; but previous to doing this we consulted Mr. J. H. Patterson, formerly one of the gas referees, and a gentleman who has devoted much time and attention to the matters involved in the question.

He has reported fully upon the subject, and a copy of his report, which is hereunto appended, was in April last forwarded to the Board of Trade; and at the same time we brought under the notice of that body a statement of what had occurred with respect to this question since 1872, and expressed our expectation that effective means would at length be taken by the gas referees for reducing the amount of sulphur in gas, which is so justly a ground of complaint on the part of the public.

In our communication to the Board of Trade we called attention to a letter from the gas referees of the 17th of June, 1872, stating that they had great pleasure in informing the town-clerk of the improved results of purification at Beckton works since their report had been placed in the hands of the gas engineers of those works. This report states "that lime is a perfectly adequate purifying agent, if used by a method and under conditions fully described in it." In a further letter of the 1st of July the gas referees also stated that they agreed with the Gas Committee that there need not henceforth be any great variation in the amount of sulphur supplied from Bow and Beckton, and that they purposed to fix the sulphur maximum at those works at 15 grains on the 1st of October; and further, that they intended to reduce the maximum to a much lower point. An order was accordingly issued fixing the maximum for Bow and Beckton at 15 grains per 100 cubic feet of gas, and 30 grains in other works of the companies included under the gas Acts of 1868 and 1869.

Nevertheless, without any reasons being given, this order was rescinded, and the maximum at Bow and Beckton was fixed at 20 grains, while no restriction was placed upon the gas made at all other works which supply the metropolis.

We also called the attention of the Board of Trade to the circular of the 30th of June, 1873, stating that the maximum for these other works would be 25 grains, but without any reason being given the limit was fixed at 30 grains; and although the gas referees have stated that they were fully aware of the desirability of reducing the amount of sulphur in gas, and were doing their utmost to urge the gas companies to effect such a reduction, none was made until the end of the month of March, 1874, when the maximum for urban works was reduced to 25 grains, leaving that for Bow and Beckton at 20 grains.

We further called the attention of the Board of Trade to the high averages of sulphur in the months of April, 1872, and which were, in consequence of the use of the mode prescribed in the report of the gas referees of March, 1872, reduced to very low maxima in the months of July, August, and September.

We also stated that we had reason to believe, from the reports received, that there was not that care and attention bestowed upon the carrying out the process of purification at the works at Bow and Beckton, and more especially at those at Bow, which would obtain a much lower amount of impurity if properly attended to.

We therefore expressed our desire that the attention of the gas referees might be called to this important subject without delay.

Your committee had hoped that after making this statement, which we were informed was transmitted to the gas referees, that these gentlemen would have given the matter their serious consideration, the more especially as we found, from the returns received from Bow and Beckton, the amount of sulphur at these works rarely exceeds from 10 to 11 grains in the 100 cubic feet of gas.

We were, therefore, much surprised at receiving the following communication and enclosure from the Board of Trade:—

Board of Trade (Railway Department), London, S.W., July 2, 1874.

Sir,—I am directed by the Board of Trade to transmit to you herewith a copy of a communication to this department from the gas referees, on the subject of your communication of the 23rd of April, relating to the maximum amount of sulphur to be allowed in gas supplied by the metropolitan gas companies.

I am, Sir, your most obedient servant,

The Town-Clerk, Guildhall, E.C. C. CECIL TREVOR.

[ENCLOSURE.]

17, *Buckingham Street, Adelphi, W.C., June 25, 1874.*

Sir,—We have to acknowledge the receipt of your letter of the 29th of April last, enclosing copy of communication from the town-clerk of the City, in which dissatisfaction is expressed with our prescriptions as to the sulphur maximum.

We can only assure you in reply that these prescriptions have been made after the most careful consideration of the interests of the public, as well as of the equitable rights of the gas companies, and we do not find in Mr. Monckton's communication any new facts that lead us to change our opinions.

With respect to the processes recommended for use in urban gas-works in Mr. Patterson's report to the Gas and Water Committee, we would point out that they are hitherto untried on the manufacturing scale; but as soon as we learn that they have been applied in any large gas-works with the success Mr. Patterson anticipates, we shall be prepared to consider whether they will justify us in fixing a lower maximum for the works in London. We have, &c.,

A. VERNON HARCOURT.
WILLIAM POLE.

The Assistant Secretary, Railway Department, Board of Trade.

TEST-BURNER.

We have further to report that so far back as the 21st of March, 1872, we called the attention of the Board of Trade to the conclusion we had come to, after carefully considering the question, that the test-burner prescribed by the gas referees under the Gas Act of 1868 (Sugg's London Argand, No. 1) for ascertaining the illuminating power of gas does not carry out the provisions of the Act, inasmuch as it is quite unfit for general use, and educes an illuminating power far beyond that which can be obtained by the ordinary consumer, and we also in our communication recited certain facts which had induced us to come to this conclusion, and stated that in our opinion no burner requiring the use of a chimney would carry out the provisions of the 43rd section of the London Gas Act, 1868; we likewise suggested that a bat's-wing or fishtail burner should be substituted, which would meet the requirements of the public and the provisions of the Act.

On the 16th of April we received a letter from the gas referees, in which the answer was simply a statement that they could not agree to the objection to the test-burner, and that the burner in question was largely used in shops, and also in private houses, and that it perfectly fulfilled the requirements of the Act.

In reply to this, on the 31st of May, 1872, we forwarded to the Board of Trade a report prepared by Mr. C. Heisch upon the subject, and pointing out the evils of the present test-burner, and its inapplicability to general use.

On the 20th of June, 1872, a letter was received from the gas referees, in which they stated that, in deference to Mr. Heisch's repeated objections, they would make a searching investigation as to the employment of the test-burner in shops, and under other circumstances of general use.

On the 20th of March, 1873, a letter was addressed to the Board of Trade recapitulating the statements previously made, and calling attention to the fact that the assertion relative to the test-burner being largely used in shops and private houses, was not justified by any returns, and is quite in opposition to the experience of the committee; and that although Argand burners may have been used in some exceptional cases, they have been abandoned as expensive, wasteful, and giving out great heat.

Upon a suggestion from the Board of Trade that, as it is the duty of the gas referees to prescribe the test-burner, direct application should be made to them, we enclosed copies of the correspondence to those gentlemen.

Your committee have very recently received the following reply to this communication:—

17, *Buckingham Street, Adelphi, W.C., July 7, 1874.*

Sir,—In May, 1873, we received a letter from the town-clerk of the City, enclosing correspondence and papers with reference to the burner prescribed by our predecessors for testing the gas supplied to the City.

The Gas Committee of the City appeared to be of opinion that the burner in question did not comply with the condition laid down in section 43 of the City of London Gas Act of 1868, that it should be "practicable for use by the consumer," and we were requested to take the matter into consideration with a view to prescribing a burner that would comply with this condition.

We have delayed replying to the above-named communication, partly to give extended time for the trial of the burner by the public, as shown by its sale, and also in order that some of our body might subject the burner to direct trial for household use under their own observation.

We learn that, to the present time, upwards of 50,000 burners, similar to the test-burners, have been sold to the public, and that the sale of them is increasing.

The results of our own trials of the burner have been satisfactory.

We are therefore of opinion that the burner does comply with the condition required by the Act, and we see no reason, on this ground, for disturbing the prescription of our predecessors.

We have the honour to be, Sir,
Your obedient servants,
A. VERNON HARCOURT.
WILLIAM POLE.

The Town-Clerk, Guildhall, E.C. (Two of the Metropolitan Gas Referees.)

Previous to the receipt of this letter we had directed that a further application should be made to the Board of Trade upon the subject, requesting that the gas referees should, without further delay, seriously consider the importance of the interests involved in their defining a test-burner for properly ascertaining the illuminating power of the gas supplied to the metropolis by the several companies, which, whilst it protects the interests of all parties, will fulfil the intention of the Legislature, and be an actual and practical test of the illuminating power of the gas as burned by the consumers, and not give an illusory result like the present test-burner, which shows an illuminating power not available to the consumer with any burner which the public can be expected to use.

From the communications received in relation to the sulphur question and the test-burner, it does not appear that any beneficial result will be obtained by bringing under the notice of the gas referees any facts in relation to these questions, or the desirability of their exercising their functions as prescribed by the Act of 1868; and we recommend that we should be authorized to confer with the Board of Trade, with a view of bringing the several matters upon which we have reported under the more immediate notice of the president, and of inducing him to take steps to remedy the evils adverted to, or, if necessary, to favour the introduction of a measure to remedy the abuses existing under present legislation.

The correspondence with the Board of Trade and the gas referees is hereunto appended for the information of your Honourable Court.

All which we submit to the judgment of this Honourable Court. Dated this 15th day of July, 1874.

There are 17 appendices to the report. The first consists of the certificate and memorandum of the Revision Commissioners, 1874; the second to the eleventh consist of correspondence with the Board of Trade, the gas referees, Mr. C. Heisch, and the town-clerk, relative to the sulphur in the gas supplied to the City; and the twelfth to the seventeenth consist of correspondence between the town-clerk, the Board of Trade, the gas referees, and Mr. Heisch, relative to the test-burner.

METROPOLIS GAS SUPPLY.

ST. GEORGE'S, HANOVER SQUARE.

A Special Meeting of the Committee of the Vestry of this Parish was held on the 1st inst., to consider a communication from the Board of Trade, forwarding a copy of an application made to the board by The Gaslight and Coke Company, for their sanction to a new gas-main being laid through this parish, and asking for the reasons of that vestry for refusing the application when made to them.

The committee, in the end, adopted the following suggestions of General Sir Wm. Codrington:—That the vestry be recommended to send to the Board of Trade an answer in effect that the company have not mentioned the fact that the main they propose to lay through the parish "has the enormous diameter of 3 feet," or that the Metropolitan Board refused to allow them to break up the roadway of the Thames Embankment for the purpose of laying down the main, or to place so large a main in the Embankment subway; that an inspection of the large trench now being dug in Sloane Street and other streets for this main, would be the best practical means of forming an opinion "on the refusal by this vestry to permit such a monopoly of the roads as the concession of a permanent vested right to a private company. The vestry of St. George decline to assist, to the present and future detriment of the parish, in unnecessarily adding to the power of this monopoly, and it looks with confidence to the support of the Board of Trade in so doing. The attention of the Board of

Trade is also called to the stringent provisions in all private and public gas Acts as to the non-proximity of gas-mains, even of those of small size, being laid down, to the mains for supply of water to inhabited houses. The vestry call attention also to the possible charge against the vestry for liability in consequence of damage being done by the steam roller." The vestry cannot understand "how it occurs that its consent was not asked, previously to the commencement of the undertaking by the gas company, if the proposed plan, and size, and main is really necessary for the purpose which they declare."

At the meeting of the vestry on Thursday, the 3rd inst., Mr. F. Morris moved that the clerk read the proceedings of the special meeting of the Committee of Works, held on Tuesday, with respect to this matter.

This having been done, Mr. F. Morris moved that the action of the Committee of Works be approved, and a copy of the objections sent to the Board of Trade. Mr. Finch seconded the motion. Mr. G. Berry doubted whether the Board of Trade would accept the objections, as this main ran through the parish to supply two others. The surveyor said the gas company's secretary told him their reason for laying down so large a main was to connect the works at Beckton with their supply. After some further conversation, the motion was carried.

METROPOLIS WATER SUPPLY.

EAST LONDON WATER SUPPLY.

The report of Mr. John Liddle, Medical Officer of Health for Whitechapel, in his report to the Board of Works, as to the sanitary condition of the district, for the quarter ending the 4th of July last, makes the following observations on the water supply:—

The water supply on the constant service is now general in the northern part of the district, which is within the water limits of the East London Company. From inquiries which the inspectors have made of the inhabitants, it appears that the change from the intermittent to the constant service has given satisfaction; and no inconvenience has been experienced by the inhabitants while the alterations in the fittings were in progress, and the expense has not been complained of, either to the board or its officers. The cost to the owners, in making the alterations, ranges from 7s. 6d. upwards, the amount depending upon the length of new pipe required. In some cases there has been no occasion to disturb the old fittings. The cost of alterations has not been nearly so great as was anticipated, and I may add that the companies are desirous to lessen as much as possible the expense to the owners of property. The screw-down taps are in general use, and they appear to be the best for private dwellings. The Kilmarnock machine, Kennedy's, and Guest and Chrimes patents, are probably the best adapted for courts; but no doubt further improvements in the course of a short time will be made in the several apparatuses now in use. Every house in the district, where a constant supply is given, will be provided with a stop-cock, situated in the street, so that in the event of the fittings getting out of repair, the occupiers can turn off the waters pending the repairs.

The constant water supply is a question of so much importance to the public health that I propose making a few remarks upon the subject; and, before doing so, it may not be uninteresting to give a brief history of the water supply in this district since the formation of the Union in 1834.

In the first volume of the report of the commissioners for inquiry into the state of large towns and populous districts (1844), it was stated in evidence that the water supply was generally given only three times a week. A few years after (1847) it was given daily, Sundays excepted. This, I am informed, was a voluntary move on the part of the companies; and in the year 1871, by the provision of the Metropolis Water Act (section 6), it was made compulsory on the water companies to supply water every day, Sundays included. Several courts in this district were, before the year 1844, either entirely without any water supply, or water was provided for the inhabitants by means of a pump, the water from which was unfit for drinking purposes; and where a pump did not exist, the people had to fetch the water from a distance. The majority of the courts were, at the formation of your board, supplied with water by means of stand-pipes, from which the water flowed for about one hour each day, when the inhabitants had to wait for their turn to fill such vessels as they might be possessed of, and store the same in their rooms until the next day, when the water was again turned on. In the year 1864, the first water-waste preventer was erected in this district, by means of which the inhabitants could obtain water at all hours of the day and night, direct from the main, without the intervention of either a butt or cistern. The question of a constant supply has been agitated in London for upwards of thirty years, and was strongly dwelt on in the report of the Committee of the Health of Towns Association on Lord Lincoln's Sewerage and Drainage Bill, which was published in 1847; yet it is only within the last few months that the companies which supply this district, have made preparations for giving to all places under their respective water limits a constant supply. We may now expect that before the termination of the year 1875, the whole of this district will be so supplied, and that all the butts and cisterns which are now in use in the poor localities will be abolished, and that the inhabitants will be able at all times to obtain a glass of cool, pure water, direct from the main.

It is highly satisfactory to be able to record the progressive improvement which has taken place in the water supply in this district since the formation of your board.

1.—All the pumps are now abolished.

2.—Not one of the old stand-pipes exists now which were erected in several of the courts, from which a limited quantity of water was supplied six days in the week to those persons who were so fortunate as to be at home when the water was turned on, and who possessed suitable vessels to hold, and convenient places to stand such vessels, whereby the water kept for the next day might not become contaminated.

3.—In my evidence given before the commissioners in 1844, when speaking of the mode of water supply to the poor, I referred to a place in Cartwright Street, where there were a number of tenements surrounding a piece of waste ground, in which a well had been sunk by the landlord, and a large tank erected over the well. The tank was filled by horse power, from which pipes were carried into the several houses. The water was turned on three times a week. The waste ground above mentioned is now built over, but the tank is still there, which has for some years past been supplied by the water company, and from it some of the houses receive the water in butts, which are situated in the cellars adjoining the privies. As this tank is raised about 18 feet above the level of the ground, it is difficult of access for the purpose of cleansing, and the probability is that it is seldom cleansed. It is also unprovided with a cover, and is, moreover, exposed to the heat of the sun. Under these circumstances, I am of opinion that the use of the tank should be discontinued, and that all the houses in its vicinity should be supplied with water on the constant service.

4.—Water is now supplied to every house where there is a receptacle for it, and the complaints of an insufficient supply are very few. In those houses in which it is impossible either to fix a butt or cistern, water-waste preventers are in use.

5.—Since the year 1871 the public has been supplied with water daily; but, to the credit of the New River Company, at my earnest solicitation, they gave a Sunday supply to all courts in Blue Anchor Yard in 1863, which they continued to do voluntarily until the Water Act of 1871 came into force.

Although the above-mentioned improvements have been effected in this district as regards the water supply, much more is yet required to be done before a satisfactory result will be arrived at. Butts still exist, some of which are placed in cellars alongside of the privies; many of the butts are without covers and taps; some are too small, and the majority of them are in bad condition, the sides being generally found covered with a green slimy matter, and the bottom covered with dirt and rubbish; while on the top of the water there is usually found a film of dust and soot, so as to render the water most repulsive to the sight. But I am in hopes that, owing to the regulations of the water companies, rendering it necessary for all butts to have a metallic lining, the storing of water for household and drinking purposes in the existing receptacles will soon cease.

In all the reports which have been made upon the subject of water supply to the metropolis, it is recommended that the constant service should be adopted. But in adopting this system of water supply, it is necessary for the protection of the public health to lay down such rules, as regards the fittings, as will prevent any contamination of the water, for unless due care is taken by all householders receiving water on the constant service, not only will there be danger to the inmates of any particular house, but the danger may extend to all those householders who are supplied by the same service-pipe.

In a most valuable report, dated May 13, 1874, made by Dr. Buchanan to the Local Government Board, on an outbreak of enteric fever in Caius College, Cambridge, the cause of such outbreak, after a long and careful inquiry conducted by that gentleman, aided with the valuable assistance of the Rev. John Lamb, bursar of Caius College, the Rev. N. M. Ferrers, Dr. Paget, and Dr. Bradbury, was traced "to the contamination of a particular section of the college water service." Dr. Buchanan states that—

As a matter of fact most of the students servants about the college, and notably those of Tree Court Staircases (the locality principally affected), spoke of the occasional absence of water from their pantry taps. In Tree Court (where, out of a population of 63 persons, 12 were attacked with fever) two or three servants said that after such an absence the water would come on "with a vengeance," "like soda water," evidently having become mixed with air, with which the pipes had become charged. The failure of water was mentioned by some servants as occurring once a month or so; by others as being more frequent; and the servant having charge of the first floor and higher floors of staircase O, spoke of it as a thing that happened two or three times a week.

Under a really constant system of high-pressure water service it is plain that pipes could not have thus got filled with air. . . . . This intermission must have gone on to the extent of allowing the whole horizontal service-main of Tree Court to have become emptied of water, if any hypothesis of mischief resulting from this air in the water-pipes is to be upheld.

Complete intermission of supply was found to have actually occurred on two occasions at least, during the last term. The first took place on the 25th of October and the second on the 1st of November.

Now, a fortnight is about the incubation time of enteric fever; a fortnight after October 25 is the date of the first attack in Tree Court. A fortnight after November 1 is the date of the second, third, and fourth attacks. And though it was known that other cases of fever kept dropping in till the end of November, the coincidence of the early fever, with these ascertained intermissions, was not the less suggestive as indicating the direction that further inquiry should take.

It is the rule with the Cambridge Water Company to supply water-closets, not directly from the high-pressure pipes, but from an interposed cistern or service-box. This arrangement, besides preventing waste of water, has the following advantages—that, if there should ever be any foul vapours from a water-closet, and these should, under any circumstances, pass through the closet supply-valve, their passage backwards along the water-pipe must be interrupted at the cistern or service-box.

This important arrangement was not observed in the water-closets in Tree Court, but these conveniences were served direct from the high-pressure pipes.

It was ascertained on analysis that the supply-pipe contained a large proportion of nitrogenized organic matter and an appreciable amount of phosphoric acid. It would seem, therefore, that water impregnated with fœcal matter must have entered these pipes, and so helped to produce these deposits.

The water impregnated with fœcal matter came from the closet taps. The trapping *water*, then, had been sucked into the water-service pipes, so that, as Dr. Buchanan adds, "if the consideration be of importance, it is now further seen that last October, *not only in air but actually in water*, fever poison may have entered the water-pipes of Tree Court."

Dr. Buchanan, towards the conclusion of his most valuable and interesting report, remarks that—

In the pathology of enteric fever and similar diseases, we know that a very minute quantity of infectious matter can, under favourable circumstances of distribution, produce very large and intense results. And, moreover, the present case does not stand alone as an instance of the spread of enteric fever by means of a so-called constant water supply that in practice has intermissions in its service.

The water supply on the constant service has been in operation in Manchester since the year 1851. The water limits of the corporation embrace an area of about 84 square miles, and contain therein 137,250 houses, with a population of about 685,000.

The constant supply, says Mr. Berrey, the manager of the internal distribution of water at Manchester, has given very great satisfaction. From inquiries which I have made of Dr. Martin, the medical officer of health for Manchester, I learn—

1. That all the houses of the poor, as well as of the rich, are supplied on the constant system.

2. Cisterns are used for storing water for baths and water-closets in all houses under £20 per annum.

3. In only a few old houses are the closets supplied from the same receptacle supplying water for drinking purposes.

4. Stand-pipes constantly charged with water are used in courts, one pipe supplying about 12 cottages.

5. There are no complaints respecting the quantity of water supplied, or of inconvenience arising from the mode of supply. The water is said to be, next to Glasgow, the purest in the kingdom. It is spring water, and is passed through wire strainers about 60 strands to an inch.

6. There is little waste of water; the consumption averages 21 gallons per head.

7. The supply of water is principally within the curtilage of each house.

Mr. Berrey says that cisterns are required only in those houses where there are baths and water-closets. The service cistern for water-closets is supplied from the main cistern. A tap carried into each house and into each apartment occupied by the poor is the plan most approved of by that gentleman.

The practical application and usefulness of the constant supply is now about to be tested in this district, as will be seen by the following extract from a report of an examination made by Major Bolton during the month of April, 1874, of the water supplied by the metropolitan water companies:—

The New River Company have the power of affording effective constant service in their district. They have also erected a new high-service covered reservoir to contain 1,000,000 gallons at Southgate, in anticipation of the requirements of the water supply to Edmonton parish. The company have in a number of cases afforded constant supply by means of stand-pipes and have agreed with a committee of the Corporation of the City of London to furnish constant supply at once to a large number of the houses of the poor situated in courts within the City bounds; negotiations are also pending for the erection of a number of fire hydrants in the City.

The East London Company are extending the constant system of supply in their district, and have given formal notice to the Metropolitan Board of Works, and to the Corporation of the City of London that they propose within the next six months to give a constant supply of water throughout the district, or area, bounded by, and contained within imaginary lines drawn along the respective centres of the Bethnal Green Road, of Brick Lane, Spitalfields, of Osborn Street, and High Street, Whitechapel, of High Street, Shoreditch, of Norton Folgate, of Bishopsgate Street Without, of Artillery Lane, of Sandy's Row, and of Middlesex Street, and situate within the parishes of St. Matthew, Bethnal Green, Christ Church, Spitalfields, St. Leonard's, Shoreditch, and St. Mary, Whitechapel, and the parishes or liberties of Norton Folgate, and the Old Artillery Ground, in the county of Middlesex, and the parish of St. Botolph Without Bishopsgate, in the City of London, or within some or one of those several parishes and liberties, except in respect of such houses, lands, buildings, and premises within that area which now take, or from time to time shall take, their respective supplies of water from the New River Company, or are beyond the district of the East London Water-Works Company. This extensive and densely populated area, containing upwards of 3000 houses, is divided into three sections, in the first of which the constant supply will commence on

the 1st of May, in the second, on the 1st of June, and in the third, on the 1st of July. This company retain their previously announced intention of bringing their whole district, section by section, under constant supply.

From the above remarks of Major Bolton, the sections Nos. 8, 9, 10, 11, 12, 13, and 14 of the Metropolis Water Act, which relate to the application of the local authority to the Board of Trade, to compel the companies to give a constant supply of water, are rendered unnecessary, as the companies which supply this district have expressed their willingness to give to all places within their respective limits a constant supply, provided that arrangements to prevent waste are made.

As the question of constant supply is not universally, or perhaps not even generally understood, a few practical suggestions relating thereto may be useful.

In the first place, it is necessary to define what is meant in the Act of Parliament by the word district. The term "district" shall mean the area selected for the purpose of constant supply, such area being within the jurisdiction of a metropolitan authority, and also within the water limits of a company, and being coterminous with one or more services of such company.

The term "premises" shall mean and include any dwelling-house, or any part of a dwelling-house, and any stable, yard, or other offices, used together, or in connexion with any dwelling-house or other part of a dwelling-house; and the term "premises" shall be deemed to be on the same service, or on a service, when water is supplied to them by a company from the same service-pipe.

1. By general consent it is deemed desirable to supply water on the constant service.

2. In poor neighbourhoods stand-pipes, one to about every four or five houses, outside the houses in each court and alley; and as a matter of convenience to the landlords, and of benefit to the tenants, it is desirable that arrangements be made for the water company to keep in repair, at their own expense, all the stand-pipes which are fixed outside the houses.

3. That it is impracticable to have, without a very large additional cost, a constant and intermittent service in the same court or alley, inasmuch as the two services must involve two distinct systems of pipes. Moreover, it was not contemplated that the two services should co-exist, but that the one should supersede the other.

4. That if outside stand-pipes be erected in any court in which the houses are supplied severally by an intermittent service, it will be necessary that the inside receptacle and fittings to the several houses should be removed previously to the outside stand-pipes being erected.

5. In all cases where the inside supply is such that the same cistern is used both for flushing the closet and for domestic and drinking purposes, such inside receptacle should be removed, and outside stand-pipes substituted for them.

6. From personal interviews and written communications, which I have had with the engineer of the New River Company, I learn that no additional cost for water-rate will be incurred by the landlord for changing the intermittent to the constant supply; and that no additional expense will be incurred by the erection of several stand-pipes in the same court, excepting the necessary cost that erecting the several stand-pipes will involve.

7. The best mode of flushing the closets in the poorer neighbourhoods is that which has been for many years adopted in this district—viz., by throwing down a pail or pails of water, the force of which will more effectually cleanse the pan and remove obstructions than the very ineffective apparatus in general use in such places, and which apparatus is seldom found to be in good working order. This plan is considered by Mr. Pole, a civil engineer of large experience, to be the best adapted for the poorer class of houses, and also by Captain Tyler, who says "that the apparatus of the water-closet is seldom in proper order, and it is probably better to leave it to be flushed by pails of water, than to attempt any more complicated arrangement."

8. Owing to the faulty construction of a great many of the houses occupied by the poor, the same being built without back yards, without landings, and without sinks, it it unadvisable to supply the tenants with water except by means of stand-pipes constantly charged with water outside the houses, although it appears that in Manchester the water supply is given inside the houses.

When butts and cisterns are used for the supply of courts, which is necessarily the case where there are no back yards and the water is on the intermittent service, these receptacles are exposed to the contamination of atmosphere which is generally loaded with impurities, and to the heat of the sun, which not only render the water unpalatable but unwholesome. Besides, butts and cisterns so placed are seldom cleansed. I may here add that it will be necessary entirely to reconstruct most of the houses occupied by the poor in this district before they can be supplied with water on the constant service in the interior of the houses.

After what Dr. Buchanan has said respecting the outbreak of fever in Tree Court, Caius College, Cambridge, the importance of the following regulations of the water companies will be fully appreciated.

Every boiler, urinal, and water-closet, in which water supplied by the company is used (other than water-closets in which hand flushing is employed), shall, within three months after these regulations come into operation, be served only through a cistern or service-box, and without a stool-cock, and there shall be no direct communication from the pipes of the company to any boiler, urinal, or water-closet.

No pipe by which water is supplied by the company to any water-closet shall communicate with any part of such water-closet, or with any apparatus connected therewith, except the service-cistern thereof.

As the question of drinking pure water and the prevention of sewer gases, from passing either into the water receptacles or houses, is perhaps the most important that can engage the attention of the public, I shall conclude this report with the following observations:—

1. All cisterns which are used for holding water for drinking and cooking purposes should be so placed, as to be of easy access for the purpose of cleansing them. This process should be performed once at least in every six weeks.

2. Where there is a cistern for holding water for drinking purposes, another cistern should be used for the supply of the closet. The danger of drinking water from a cistern which supplies a water-closet is so great, that the same should be carefully avoided.

3. If a wash-hand basin be fixed in the closet, the outflow-pipe should be trapped if the same should empty itself into the soil-pipe, and water should always be kept in the wash-hand basin, so as to form another trap, whereby the foul air from the soil-pipe may be prevented from entering the closet and from thence into the house.

Dr. Frankland, F.R.S., remarks, as the result of a chemical examination of the waters supplied to the metropolis during August, that, taking the amount of organic impurity in an equal volume of the Kent Company's water as unity, the proportional amount of this impurity in an equal volume of water supplied by each of the other metropolitan companies was—New River, 1·3; East London, 2·1; Chelsea, 2·3; West Middlesex and Grand Junction, 2·4; Lambeth, 2·8; and Southwark, 3·0. The water delivered by the Grand Junction Company at Lancaster Gate, Hyde Park, on the 1st of August was "slightly turbid and contained living organisms," whereas the waters supplied on that day by each of the other London companies were found clear and transparent. All evidence of "previous sewage or animal contamination in the East London Company's water had again been obliterated by prolonged storeage." The water supplied by the Kent Company from deep wells in the chalk, although showing a greater "total solid impurity" than the water of any of the other metropolitan companies, again contained the smallest quantity of "organic matter."

The Registrar-General publishes the following returns of the average daily quantity of water supplied by the London water companies, during the month of July, 1874. According to their returns 127,563,243 gallons, or 579,578 cubic mètres of water (equal to about as many *tuns* by measure, *tons* by weight) were supplied daily; or 249 gallons (113·1 decalitres), rather more than a *ton* by weight, to each house, and 35·1 gallons (15·9 decalitres) to each person, against 35·2 gallons during July, 1873. According to returns of the London water companies made to the select committee on East London Water Bills (session 1867), it is estimated that, during the year 1866, about 82 per cent. of the total supply of water for all purposes was for domestic use. Applying this proportion to the total quantity supplied daily in the month of July, 1874, it may be estimated that about 104,601,859 gallons were used for domestic purposes, or about 28·8 gallons per day for each inhabitant, against 28·9 in the corresponding month of last year. This proportion varies from month to month, but the Registrar-General has no means of giving a more reliable estimate.

Companies.	Number of Houses, &c., supplied in July, 1873.	July, 1874.	Aver. Daily Supply of Water in Gallons* during July, 1873.	July, 1874.
Total supply	504,579	512,203	128,144,369	127,563,243
From Thames	236,566	240,510	64,673,369	66,027,677
„ Lea and other Sources	268,013	271,693	61,471,000	61,535,566
Thames.				
Chelsea	28,270	28,467	9,055,400	9,115,800
West Middlesex	44,920	46,117	10,786,739	11,079,436
Southwark and Vauxhall	79,438	79,722	18,962,041	18,972,350
Grand Junction	34,243	35,144	12,584,689	12,740,191
Lambeth	49,695	51,060	13,276,500	14,119,900
Lea and other Sources.				
New River	121,391	122,296	28,243,000	29,552,000
East London	104,481	106,459	25,782,000	24,639,000
Kent	42,141	42,938	7,446,000	7,344,566

* Including that for manufactures and for various purposes other than for domestic consumption.

Note.—The return for July, 1874, as compared with that for the corresponding month of 1873, shows an increase of 7624 houses, and of 1,418,874 gallons of water supplied daily.

WREXHAM GAS COMPANY.

The Ordinary General Meeting of Shareholders was held on the 31st ult.—Mr. Overton in the chair.

The Secretary (Mr. Walker) read the notice convening the meeting, and after the seal had been affixed to the register of shareholders, he also read the directors report, as follows:—

The thirty-fifth annual statement of accounts is submitted herewith.

Since their last annual report, the directors have obtained from the Board of Trade, under the Gas and Water Works Facilities Amendment Act, of 1873, a Provisional Order, enabling the company to advance the price of gas, owing to the increased cost of production. The order took effect from the 30th of November last, and enables the company for two years (from that date) to charge an additional sum of 8d. per 1000 cubic feet for gas, the rate of dividend not to exceed £3 15s. per cent. per annum, during the continuance of the order. The costs of obtaining the order were rendered very heavy by the opposition of the Town Council, which led to a local inquiry by a commissioner from the Board of Trade (Mr. Vernon Harcourt) whose favourable report has already been presented to the shareholders.

The cost of coal and cannel has exceeded the average of the previous year, but the directors are happy to state that they are now obtaining coal on more favourable terms, still the cost is nearly 50 per cent. higher than when the company's Act of Parliament was obtained.

The receipts for residual products show an increase for the past year, but this source of revenue has now declined, there being very little demand for coke at present, even at a greatly reduced rate.

A dividend at the rate of 1½ per cent. was paid to the shareholders for the half year ended the 31st of December last.

The directors now recommend a dividend at the rate of £1 17s. 6d. per cent. for the half year ended the 30th of June last, being at the rate of £3 15s. per cent. per annum, prescribed by the Provisional Order. The surplus will be applicable towards the reduction of the costs of obtaining the Provisional Order.

The retiring directors are Messrs. Davenport, Jones, and Milligan; and Mr. William Jones retires in rotation as one of the auditors. They are eligible for re-election.

The Chairman, in moving the adoption of the report, said they had just passed through a period of difficulty, consequent upon the enhanced price of coal, labour, and everything else required in the production of gas. This rendered it more than ever incumbent on the directors to use the greatest economy, and to this they had given their greatest attention. Unfortunately, they had been disturbed last year by a strong opposition to their application to the Board of Trade. Their application was not for a dividend equal to what they had been receiving in former years, but only for 5 per cent. Other companies had applied and raised their prices, but in no case that came under his notice had he found any such opposition as that they had been compelled to encounter. The opposition resembled in some measure that which met them in Parliament in 1870. The local board had no case against them, but made it out of theirs (the company's) as they went along. Certainly they had the advantage of their parliamentary experience, and the assistance of a gentleman as counsel, who was a director, if not chairman, of one of the metropolitan gas companies, and consequently had a thorough knowledge of the subject. The cost of this opposition, which amounted to a rate of about 4d. in the pound, fell upon the ratepayers. Instead of that, he thought it ought to fall on those who brought it on. They had no right to spend any money without consulting the ratepayers, and it was yet open to any ratepayer to take steps which might result in the members of the local board being compelled to pay the expenses themselves. The chairman having commented on the greater advantages derived by London companies from their applications to the Board of Trade than were obtained by country companies, referred again to the cost of production, and showed that their proximity to the coal-fields, while it did not tend in any degree to lessen the cost of coal, prevented them from realizing the same profits from the sale of coke, and the other residual products, which places more remote from the coal districts were able to obtain. Some of the companies were able to obtain 60 and 70 per cent. of the cost of their coal back again from the sale of their residual products, but here they were only able to obtain £1000 out of £3000.

Mr. Rowland seconded the motion, which was carried, and the retiring directors and auditor were re-elected.

The Chairman moved, Mr. Norman seconded, and it was agreed—"That the dividend of 1½ per cent. made in December last be confirmed, and a dividend of £1 17s. 6d. for this half year be declared, and be paid on the 4th of September."

The proceedings closed with thanks to the chairman.

Death of Mr. William Crosley, C.E.—*The Times* of Thursday last contains a notice of the death of this gentleman on the 28th ult., at his residence, St. James's Square, Notting Hill. Mr. Crosley was a nephew of the late Mr. Samuel Crosley, of Cottage Lane, in whose service he was employed for many years. He subsequently engaged in the gas-meter business on his own account, and took an active part in the proceedings connected with the passing of the Sales of Gas Act, 1859. For some time past he had retired from this department of trade. He was a man of a genial disposition, and held in high respect by those who had the pleasure of his private friendship. He was in the 56th year of his age.

EASTBOURNE GAS COMPANY.

The Half-Yearly Meeting of this Company was held on Monday, Aug. 24—Dr. G. A. JEFFERY in the chair.

The balance-sheet and the following report were taken as read:—

In pursuance of the power given to the directors at the extraordinary meeting of the company, held on the 23rd of February last, they offered to the then shareholders the 500 B shares, issued for the purpose of raising a sum of £5000 on account of the capital of the company, and received applications for 442 shares in excess of the number at the disposal of the directors. The shares were allotted to the applicants *pro ratâ*, and the calls upon the same (with the exception of £140) were duly paid prior to the 30th of June last.

By this means the directors have been enabled to pay off the balance appearing due on the capital account at the date of the last balance-sheet, and they have now a balance in hand on that account of £3148 14s. 3d., as will be seen by the accompanying balance-sheet. Some portion of this amount will be at once required for the enlargement of the company's works.

The directors have also renewed the loan of £5000, secured on debenture bonds of the company, for a further period of five years from the 5th of April last, at interest after the rate of 5 per cent. per annum.

Since the publication of the directors last report they have entered into a contract with the Pelaw Main Colliery Company for the supply of their gas coals for a further period of twelve months from the 13th of April last, at 13s. 6d. per ton. This is a considerable reduction in the price paid for the previous year, and fully justifies the directors in the course they pursued in entering into a contract for a short period only.

The directors have also entered into a contract with Mr. E. Wood, of No. 11, Rood Lane, Fenchurch Street, for a term of three years, from the 1st of July last, for the sale to him of all the tar and ammoniacal liquor produced at the works.

The contract with the local board for lighting the public lamps at £5 per lamp per annum expired on the 22nd of April last, and they having elected to burn the gas required by meter, meter lamps have been fixed in various parts of the town as approved by the company's manager (Mr. Isaac Winchester) and the surveyor of the board, and the system is now in full working order, and the directors believe it will prove satisfactory to all parties.

The directors having received a memorial from some of the shareholders of the company praying that the remuneration allowed for collecting the gas-rates might be reduced, took the matter into their consideration, and eventually proposed a reduction of one-third, which was ultimately accepted by the collector.

The working account shows a total increase in the revenue of £695 19s. 8d.

On comparing the liabilities and assets of the company on the 30th of June last, there remains a balance of £774 19s. 4d. available for dividend.

As the last call upon the B shares only became due on the 24th of June last, the directors do not propose to recommend any dividend to be paid upon them, but recommend that a dividend at the rate of £7 per cent. per annum, for the past half year, be declared and paid upon the original capital of £20,000.

The directors who retire from office this year by rotation are Messrs. Thomas Arkcoll, George Augustus Jeffery, and John Sheridan, and they are all eligible for re-election.

Mr. Josiah Brown also retires from the office of auditor by rotation, and is also eligible for re-election.

The CHAIRMAN, in moving the adoption of the report and balance-sheet, remarked that since the last meeting the directors had, in pursuance of the power given them, issued new stock to the amount of £5000. The shareholders had had the opportunity of taking up these shares at par *pro ratâ*, and it must, he was sure, be very gratifying to them to know that nearly double the number of shares were applied for. These "B" shares were to carry a maximum dividend of 7 per cent. It would be recollected that last year there was a considerable sum due to the bankers on the capital account. By the issue of the new shares this had been paid off, and there was now upwards of £3000 in hand. The £5000 borrowed from a private source, and secured on debenture bonds, having become due, it had been necessary to renew this loan, and this had been done at £5 per cent., an addition of one-half per cent. to that previously paid. The directors were in a position, as the report stated, to declare a dividend of £7 per cent., and he fully believed that if it had not been for the enormous cost of coal, they would have been enabled to give the shareholders 10 per cent., and to offer gas to the public at a decreased cost. This, under present circumstances, was out of the question. The company were now paying double, and had until recently paid treble what they used to pay for coals. The cost at present was 13s. 6d., and it had been 22s., whereas formerly they only paid 6s. 9d. per ton. He should not be satisfied until they paid 7 per cent. on the new and 10 per cent. on the old shares. Shareholders in gas and water companies—considering the risk they ran—were entitled to this amount of interest. No doubt in a year or two—he hoped next year—they would be able to offer a better dividend than at present. The coal contract for the current year was much more favourable than last year's, and there was reason to hope that prices would continue to decline. The directors were asked at the last meeting to endeavour to get a reduction in the amount for the collection of the gas-rates. They had taken the matter into their serious consideration, and had suggested a reduction of one-third in the rate of poundage, and this the collector had agreed to accept. The chairman assured the meeting that the most careful attention had been given to the affairs of the company, and, as proof of this, read a list of the attendances, from which it appeared that no director had been absent more than three times, while three had been present at every meeting.

The motion, having been seconded, was carried without comment, and the directors retiring by rotation were unanimously re-elected.

Dr. JEFFERY and Mr. SHERIDAN acknowledged the confidence reposed in them, and assured the shareholders that it would always be their anxious endeavour to look after the interests of the company.

Mr. Josiah Brown having been unanimously re-appointed auditor, the CHAIRMAN said the next business was to determine the amount of remuneration to be paid to the directors, and it was decided to vote the same remuneration as last year—viz., £100.

The SECRETARY read a letter from a shareholder, pointing out that no dividend was proposed to be declared on the new shares, and stating his belief that the company were bound to pay a dividend from the respective times when the calls were made.

The CLERK explained that the dividend represented, in most cases, such small sums that it had been thought best to add it to the next half year's dividend.

The meeting then terminated.

NEWPORT (MONMOUTHSHIRE) WATER-WORKS COMPANY.—At the half-yearly meeting of shareholders on the 31st ult.—Mr. J. Lawrence in the chair—the directors report stated that the profits enabled them to recommend that the guaranteed interest for the half year ending the 30th of June on the preference shares be paid; that a dividend of £4 per cent. for the same period on the ordinary share capital called up be declared; and that such interest and dividend be payable on the 1st day of September next. This would leave a balance of £1004 14s. 8d. to the credit of the general revenue account. The directors had satisfaction in notifying to the proprietary that they had contracted with Mr. J. E. Billups, of Cardiff, for the construction of the new reservoir and works, at Pant-yr-eos, as designed by Mr. John Taylor, C.E., and that such works were engaged to be completed by the 31st of December next. The chairman, in reply to Mr. Batchelor, stated that the reserve-fund could be appropriated for the purposes of dividend at any time, and, if necessary, would be applied for equalizing the dividend. At the present time they were paying their maximum dividend—viz., 8 per cent. Mr. Batchelor asked whether with the new works, when completed, although with a larger revenue, they would probably not have to pay a lower rate of dividend to the shareholders. The chairman said the board were sanguine that, with the increase of the town and population, a larger supply of water would be needed, and the result would prove no detriment to the dividends. The report was adopted, the dividends recommended therein declared, and the usual votes of thanks passed.

BRIGHTON (OLD) GASLIGHT AND COKE COMPANY.

The Ordinary Half-Yearly Meeting of the Proprietors of this Company was held on Thursday, the 27th ult., when the following report and accounts were presented and adopted.

Uneventful in their course, the six months to Midsummer afford the directors but scant material for remark on the affairs of the company.

The same disposition on the part of the public to economize in gas which characterised the previous half year has continued, and the increase of consumption has consequently been inconsiderable.

As soon as the heavier work of the season was over, the annual repairs and renewals were begun, and are far advanced, in preparation for the coming winter. Some enlargements also in the manufacturing department, which, owing to the high price of materials and labour, had been postponed, but which could not prudently be longer delayed, are now in progress.

The directors recommend the declaration of a dividend on the paid-up capital of the company of 5 per cent. for the half year ending the 24th of June last, less income-tax; the same to be payable on and after the 7th of September next.

Dr. Profit and Loss Account, for the Half Year ending June 24, 1874. Cr.

Coals	£12,368	4	2	Gas and meter rental	£17,079	8 11
Materials for purification	299	12	0	Coke, &c.	5,393	14 3
Wages	1,726	10	0	Old stores, &c.	117	12 2
Rent, rates, and taxes	282	9	0			
Salaries, collectors commission, directors, and auditors	1,461	4	2			
General charges	159	5	4			
Wear and tear	1,461	11	9			
Bad and doubtful debts and allowances	177	8	9			
Interest on debentures	155	0	0			
Balance	4,499	10	2			
	£22,590	15	4		£22,590	15 4

Dr. Balance Sheet, June 24, 1874. Cr.

Capital	£88,000	0	0	Expended on works	£85,295	14 8
Debentures	6,200	0	0	Works in progress	887	13 3
Contingency-fund	5,775	12	6	Meters	2,009	14 11
Coal insurance account	1,762	7	7	Coal, coke, &c., in stock	5,461	0 5
Dividends unpaid	1,404	8	7	Mains, service-pipes, and general stores in stock	1,172	10 11
Depreciation account	2,377	3	11	Sundry debtors for gas	6,791	3 1
Interest on debentures	52	17	3	Sundry debtors for coke, &c.	2,927	11 7
Tradesmen's accounts, &c., owing	1,552	13	2	Cash at bankers, on deposit, and in hand	7,243	12 3
Balance from last half year	164	7	11			
Ditto this half year, as above	4,499	10	2			
	£111,789	1	1		£111,789	1 1

SOUTH SHIELDS GAS COMPANY.

The Half-Yearly General Meeting of this Company was held on Monday, Aug. 31.—Mr. W. ANDERSON, J.P., presiding.

The directors report, which was as follows, was taken as read:—

Your directors beg to submit the report and balance-sheet for the half year ending the 30th of June, 1874.

The high price continued to be paid for coals—owing to contracts made during last year—has prevented your directors showing as favourable a balance as has been shown on former occasions; but as fresh contracts have been made at lower prices, they trust that in future they will be enabled to show more favourable results.

On this occasion they recommend, with much pleasure, that the dividends, as heretofore, be 4½ per cent. on the old and 3½ per cent. on the new capital of the company, which will still leave a balance to be carried forward.

Your directors have on former occasions mentioned the necessity for the enlargement of the works to meet the increasing demands of the district. They have to announce that the time has now actually arrived, and they have, according to the powers vested by you in them, purchased a site of ground at Jarrow, contiguous to the old Jarrow works, large enough to duplicate the present works. The engineer (Mr. W. J. Warner) is now engaged with plans for the new plant, which will require a considerable outlay of capital. Your directors feel the great responsibility of the occasion, but they are confident of being able to realize the full dividends in a very short space of time. The consumption has been steadily increasing for the last ten years.

The reports of the inspector, Mr. Pattison, appointed by the corporation, have, for the last six months, been most favourable, the illuminating power having been kept up to the necessary standard.

The dividend warrants will be payable, as usual, on the 7th of September.

The CHAIRMAN, in moving that the report and accounts be received and adopted, remarked that he believed the dividends would be as satisfactory as usual. During the half year there had been considerable difficulties in the way of the company; the price of coals was considerably reduced from what it had been, and that had afforded the company some relief, but they had had other difficulties to contend with. They found that they were much cramped for space, and they could not get on in manufacturing as they ought to be able to do. They could not get a site at Shields to extend the works, and hence they were driven to Jarrow to get an increased space there. Fortunately, a vacant site was found near to where their old works were, and that they had secured from Mr. Drewett. The Jarrow works would relieve the pressure at South Shields, and would, he had no doubt, prove very advantageous to the company. In carrying out that scheme additional capital would probably be required. He thought the prospects of the company were very fair indeed, and that the shareholders had approved of what the directors had done.

Mr. HEWISON seconded the motion, and said that he thought the outlay that they had made at Jarrow would be of a very satisfactory character.

The motion was put and carried unanimously.

Mr. J. L. HALL moved, and Mr. H. NELSON seconded, a resolution that a dividend of 4½ per cent. on the old, and 3½ per cent. on the new capital for the half year be declared, which was carried unanimously.

A vote of thanks was passed, on the motion of Mr. DOUGLAS, seconded by Mr. DUNCAN, to the directors for their care and attention to the interests of the company during the past half year, which having been responded to,

Mr. JOHN HENDERSON moved a cordial vote of thanks to the chairman. The vote was seconded by Mr. W. H. FAIRBAIRN, and carried amid applause, and the meeting terminated.

HULL GAS SUPPLY.—Mr. Baynes reports that during August the gas sent into the Sculcoates and Myton district by the British Gas Company maintained a satisfactory standard of illuminating power and chemical purity; free ammonia and sulphuretted hydrogen were at no time present to the ordinary tests. The results for the month are:—

	Max.	Min.	Mean.
Illuminating power standard sperm candles	16·94	15·94	16·41
Grains of sulphur per 100 feet	19·50	15·00	16·90
Grains of ammonia per 100 feet.	—	—	0.30

Mean barometer and temperature in experiment-room:—Bar., 30·10; tem., 67°.

NEATH WATER COMPANY.—The ordinary general meeting of this company was held at the offices, Parliament Street, Westminster, on the 24th ult.—Mr. T. J. White, presiding. The chairman, in moving the adoption of the report, congratulated the shareholders on the flourishing state of their affairs. The dividend to be declared was the maximum one of 10 per cent.; and there was every reason to believe that the value of their undertaking would be still further enhanced owing to the establishment of different works at Briton Ferry. In consequence of the great drought of the present year, Mr. Hawksley was engaged in plans for the construction of filter-beds and the extension of storage supply. As soon as Mr. Hawksley's report was received, steps would be taken to carry out his suggestions. The report was adopted, and the dividend, as recommended, declared. Mr. T. M'Dougall Smith, C.E., was elected a director in the place of Mr. J. H. Rowland, resigned.

LANCASTER GAS COMPANY.

The Annual General Meeting was held at the Works on Wednesday, Aug. 26—Dr. Denis de Vitre in the chair.

The Secretary and Manager (Mr. W. Fleming) read the following report of the directors:—

Your directors have much pleasure in submitting their report and statement of accounts for the year ending the 30th of June, 1874, which accounts have been duly audited.

The works and plant are in good working order, and the additions lately completed have fully realised the expectations of your directors. The increase in the sale of gas and residuary products has been very satisfactory during the past year. The discounts allowed to private customers amount to £568 10s. 9d.

Your directors have been very much disappointed at the slow progress made towards the completion of the new offices and show-rooms, but they hope to have them opened for business shortly.

The profits on the past year amount to £3167 17s. 4d., which, with the balance from last year's account, gives a sum of £4069 2s. 9d. available for dividend, from which your directors recommend a dividend for the year at the rate of 10 per cent., and 2 per cent. as arrears of dividend for the year 1868 (less income-tax), payable on the 1st day of September next, leaving a balance of £514 12s. 6d. to be carried forward to next year's account.

Your directors have filled up the vacancy in the board occasioned by the death of Mr. Gregson, by electing his son, Mr. B. P. Gregson, of Caton.

The directors regret having to announce the death of Mr. Gardner, one of your auditors. They have filled up the vacancy by appointing Mr. Thomas Edmondson, subject to the confirmation of the shareholders at the meeting. Dr. De Vitre and Mr. Gregson, two of your directors, retire at this meeting, and, being eligible, offer themselves for re-election.

Mr. Michael Harrison, one of your auditors, retires at this meeting.

The auditors report showed that the balance of revenue account, after providing for the usual renewals, &c., and interest on the £5000 borrowed, was £3164 17s. 6d.; balance from last year, £901 5s. 3d.; total, £4069 2s. 9d.

The Chairman, in moving the adoption of the report, said: It is a matter of congratulation, I think, to us that we have been enabled to present to you so favourable and satisfactory a report as we have this day been able to produce. Everything within this institution, both as regards the plant, offices, and general management, is, to our minds, perfectly satisfactory, and without that satisfaction we should not have been able to arrive at such favourable results and conclusions as the report to-day indicates. I may state, for your information and for general information, that it is owing only to circumstances of a fortuitous character that we are in a good position at the present time. You all remember the late rise in coals—a rise very ruinous to gas-works not previously well stocked with coals, or without good contracts. Our contracts at that time were not exhausted; they were of a most favourable character, and we had hundreds of tons on hand. This fact, with our uncompleted contracts, enabled us at that time to tell the public—and we did tell them—that we hoped to get through the succeeding year without altering the price of gas in Lancaster. The object with us was, if possible, to prevent such a contingency, and we have not been under the necessity of raising the price of gas, although we have had to expend a considerable per centage more for coals. I do not know the exact amount, but perhaps our manager will be able to inform us.

The Manager: About 75 per cent. more.

The Chairman: That has been a serious matter. Coals, however, are now dropping in the market a little, and we can at this present moment take contracts at a considerable amount less than the last contracts we had. We have not yet entered into contracts of a permanent character, although we are taking care to have the gas-works well supplied with coals, not only for present use, but for several months to come, without entering into any positive contract. You will see by the report that there is a handsome balance carried forward from last year to the general credit of the establishment, and that enables us to recommend the usual dividend of 10 per cent., and also enables us to pay 2 per cent. of that money yet due to the proprietors. You must not expect that we can do this next year, but if we can we will. In the meantime, it is gratifying to us to recommend what I have named for your adoption to-day. I do not know that the directors report requires any special remarks from me, with the exception of what one terms the new chemical works. The works have certainly been completed, and meet in every respect the expectations of the directors. The works will now be carried on with greater facility and more economy than they were formerly, when we were conducting our operations in various parts of the establishment, without centralization. We hope to reap considerable advantage from the alterations that have recently been made.

Mr. J. S. Harrison seconded the motion, which, after some conversation upon a suggestion of one of the auditors in reference to the keeping of the bankers account and the security given by the officers, was put, and carried unanimously.

The Chairman then proposed that a dividend of 10 per cent. be paid to the shareholders on the 1st of September, and that a further 2 per cent. be paid to the proprietors for the arrears of dividend due to them for the year 1868, on the same date, less income-tax.

Mr. Howitt seconded the motion, which was carried.

On the motion of Mr. Simpson, the appointment of Mr. Thomas Edmonson to the vacancy in the auditorship, occasioned by the death of Mr. Gardner, was confirmed, and the retiring directors were re-elected.

The Chairman, in acknowledging his re-election, said: In returning thanks, I do not wish to detain you very long, but I can say that I have acted as chairman of this company nearly 40 years, and we have gone through, at one time or another, very considerable and grave difficulties—difficulties to which it is not necessary for me now to allude. We conquered them, however, and at the present time and for some years back this institution has been carried on as a general company for the manufacture of gas and its products, in a most satisfactory manner, and I may say it is in a flourishing state. More than that—and it is a credit to the manager, Mr. Fleming—I know for a fact that these works at the present moment are considered model works throughout the country, and persons from a distance come to visit them, and take hints from the management of the mode in which gas is manufactured and carried to the town. Difficulties may occur from time to time that may annoy consumers, which a little explanation may set aside, and, with the exception of circumstances of that kind, I believe these works and all persons connected with them are performing their duties perfectly well and on sound principles. I am much indebted to you for your kindness in re-electing me one of your directors. I am suffering from an infirmity which causes me not to be as active as I have been. I have to depend upon the eyes of others, but I trust I have lost none of my judgment, and so long as I can be of any service to this company I shall always be happy to do what I can.

Mr. Gregson also returned thanks.

Mr. W. G. Welch was elected auditor in the place of Mr. M. Harrison, and a vote of thanks was presented to the chairman and directors for their continued exertions in the interests of the company—a compliment which the chairman acknowledged for himself and colleagues.

Mr. Edmondson: I have much pleasure in proposing a vote of thanks to the manager. Those who consider our present position, and recollect what it was when Mr. Fleming took the management, must come to the conclusion that he is deserving of our warmest acknowledgment of his services. At the time to which I allude, 12 or 14 years ago, we had bad gas and paid a high price for it. There was a chorus of complaint in the town about the gas company, and I have an impression that there was a threat of another company being started. We have now excellent gas, and no reasonable ground for complaint, and we pay less for it than we did at the time to which I allude. The dividends have improved very much, and in my opinion all this is due in a great measure to the able services of our manager, and I think it would only be an act of gratitude on the part of the shareholders to return him our sincere thanks.

The Chairman: No doubt that proposition will be carried by acclamation, and I may say it has the full concurrence of the directors.

The motion was put and cordially adopted.

Mr. Fleming: Gentlemen, I am much obliged to you for the cordial vote of thanks and continued approbation of my services. Every effort I have put forth has hitherto been to promote the interest of the shareholders as well as the general public, and I have always been willing to give every information to the shareholders that lay in my power. I feel a deep interest in the company, and shall always endeavour to promote its welfare.

The proceedings then terminated.

DOVER GAS COMPANY.

The Annual Meeting of Shareholders was held on Tuesday, the 1st inst.—Mr. Shipden in the chair.

The report, which was as follows, was taken as read:—

The profit and loss account for the past half year shows a balance in favour of the company of £1568 9s. 5d., and we, therefore, have the pleasure of recommending the payment of the usual dividend of 6¼ per cent. per annum, after payment of which there will be £73 9s. 5d. to be carried to the surplus profit account.

The cost of coal has experienced a considerable decline, and we have already begun to realize the benefit of the sliding scale in the price we pay our managers for manufacture. We have accordingly announced a reduction of 3d. per 1000 cubic feet in the price of gas to private consumers from the 1st of October next, which will somewhat exceed the benefit we shall derive from the decrease in the cost of manufacture during the half year.

We have also resolved upon a further reduction of 3d. per 1000 cubic feet to private consumers, to commence on the 1st of January next, when the sliding scale with the managers will have further operation.

We have arranged with the Town Council for a new contract for lighting the public lamps for a term of three years (to commence at the expiration of the existing contract, on the 1st of January next), at the price of £4 11s. 6d. per lamp. Our existing price of £4 was fixed before the rise in the price of coals, materials, and labour commenced, and the increased price charged under the new contract is only commensurate with the additional cost of manufacture in the circumstances which we anticipate will have occurred before the 1st of January. The price of gas to the council will be 4s. 3d. per 1000 cubic feet, being the same price as from that day will be paid by private consumers, and a price sensibly below that charged in any neighbouring town whose circumstances of supply are at all analogous to those of Dover.

Two of your directors, Messrs. Henry Latter and Willsher Mannering, and one auditor, Mr. Henry Hayward, retire from office at this meeting, but are eligible for re-election.

The engineer's report, signed by Mr. T. N. Kirkham, was as follows:—

I beg to report that on my late visit of inspection to your several works, I found the whole of the buildings and apparatus in satisfactory condition and efficient working order. The old retorts in one half of the retort-house have been replaced with new during the last four months; the remaining half, the usual repairs are being carried out; and the whole will shortly be ready for the winter's work. The total cost of the above-mentioned devolves upon your managers.

The managers report, signed by Messrs. Anderson and Jones, was as follows:—

The present consumption of gas is in excess of last year, which we expect will be further stimulated by the proposed reduction of 6d. per 1000. We fear we will again be deficient of storeage, as it is too late to enlarge the gasholder in Russell Street for use this winter. We will do our best, however, and maintain the supply by the use of extra retorts, looking forward to the telescoping of this gasholder early next year.

The Chairman, in moving the adoption of the report, said he was very sorry to be called upon to take the place of the worthy chairman—Mr. W. R. Mowll—who was prevented from attending by severe illness. The report of the directors contained nothing to call for observation. The shareholders would have observed, however, that there was to be a prospective reduction in the price of gas, commencing in October, to be followed by another reduction of 3d. per 1000 in January. This, it was hoped, would conduce to the prosperity of the company by promoting a progressive increase in the consumption of gas; and if it had this effect it would be to the benefit of all. The usual dividend of 6½ per cent. was offered on this occasion, and it was gratifying to think that this could be declared without trenching upon the surplus profits, as they did in 1873.

Mr. Anderson said before the report was put he would just say that for some years past they had been assured of a larger dividend, and they were told that the reason of their not having it sooner was because of having to remove the gas-works to a new place, and spend a large sum of money, that they might be well out of the town, and therefore less obnoxious to the people who had fine noses; but, having recovered themselves from that large outlay, he felt that the shareholders were entitled to a larger dividend than 6½ per cent. When he read that portion of the report which stated there was to be a reduction in the price of gas in October, and again in another three months, he made sure he was coming to a paragraph in which it would be stated that a larger dividend was to be declared. However, he was disappointed in that; and it appeared to him that before gas was reduced to so low a price—in fact, it was far below that charged by some of the largest London companies—before the directors committed themselves to that they ought to shadow forth that the shareholders were to have a larger dividend than 6½ per cent., which was far too low as money went. Five or six per cent. was not, he contended, a sufficiently high dividend; and unless the directors could promise an enhanced rate, he would ask the shareholders to pause before they consented to reduce gas to the low price of 4s. 3d. per 1000 in January next.

Mr. R. H. Jones said he felt called to answer the remarks of Mr. Anderson. He might state to the shareholders that he had had the confidence of the directors in recommending to them certain financial matters in the report in connexion with the price to be charged for gas, and he thought he could see his way clearly, and the directors had seen their way clearly, to declaring a dividend of 7½ per cent. at the end of the ensuing year. He might mention now that there was some little misconception as to the increased price charged for the public lamps. It was said they were taking out of one pocket and putting it into another. But the increase in the price of the public lamps would only amount to some £300, whilst the reduction to private consumers would be something like £1500 or £1700. Therefore, it would be seen that they were not robbing Peter to pay Paul, but making a substantial reduction to private consumers. In conclusion, he hoped when they met next year affairs would have been so prosperous that they might hear an increased dividend declared.

Mr. Philpott said he, too, was somewhat surprised at seeing no mention in the report of a rise in the dividend. He thought the shareholders had been led to believe, particularly from the published correspondence of the last few years, that they should receive 7½ per cent., and he was disappointed not to see it mentioned. The remarks of Mr. Jones had reassured him. Mr. Fielding, in his correspondence some time back, said he was anxious they should have 7½ per cent., and as they had almost counted on it, he was pleased to hear that there was a prospect of its coming. He would second the adoption of the report.

The motion was put, and carried unanimously.

The retiring directors and auditor were re-elected, and a vote of thanks to the chairman terminated the proceedings.

Birmingham Water Supply.—Dr. Hill, the medical officer of health for Birmingham, reports that the water supplied to that town during August was slightly turbid, and that the quantity of "organic nitrogen" continues to increase.

Glasgow Water Supply.—Professor Bischof, of the Andersonian University, Glasgow, reports that during the month of August the water supplied to that city from Loch Katrine was "yellowish and opaque through suspended matter."

HARTLEPOOL GAS AND WATER COMPANY.

The Annual General Meeting of this Company was held on Thursday Aug. 27—Mr. T. R. HOLMES in the chair.

The following report was taken as read:—

Your directors have pleasure in presenting the annexed balance-sheet for the past year, and are gratified in being able to report that the consumption of both gas and water has considerably increased.

The balance available for division is £12,696 2s. 1d., out of which your directors recommend the payment of a dividend for the last half year at the rate of 10 per cent. per annum on the old or A shares; at the rate of 7½ per cent. per annum on the B shares; and at the rate of 7 per cent. per annum on the remaining paid-up C capital of the company; in all cases less income-tax.

In order to meet the increased demand for gas the directors have found it necessary to extend the purifying and other plant at West Hartlepool works, which when completed will form valuable additions to your property.

The increased demand for water for business purposes fully justifies the application to Parliament in the last session for power to purchase land for increasing the storeage both at Hart and Hurworth; and your directors have pleasure in reporting that the Act authorizing these extensions received the Royal Assent on the 30th of June last, and will be carried out without delay.

The following is the report of the engineers, Messrs. Martin and Fenwick, on the works:—

"Gentlemen,—We have pleasure in reporting the satisfactory condition of the works at Hart and Hurworth. The continued increase in the consumption of soft water for trade purposes, combined with the extraordinary drought which (until last month) has prevailed since September, has severely tried the resources of the company; but, aided by the hard water springs at West Hartlepool, an uninterrupted service has been maintained throughout the district.

"The necessity for an immediate enlargement of the storeage reservoirs (anticipated in our report last year) has, however, been fully proved, and we are now preparing to carry out your instructions for largely increasing the storeage capacity of the reservoirs at Hurworth and Hart, under the parliamentary powers obtained in the present session.

"At the water-tower the progress made in the construction of the large iron tank has not been satisfactory; but the contractors have given us an assurance that the work will shortly be completed to our satisfaction."

The five years agreement with the secretary will expire on the 31st inst., and he has applied for an increase of salary, which your directors recommend be advanced to £500 a year, he agreeing to serve the company for a term of years.

The retiring directors this year, who are eligible for re-election, are Messrs. Lawrenson and Oldham, and the retiring auditor is Mr. W. Richardson, who offers himself for re-election.

The CHAIRMAN moved the adoption of the report, the payment of a dividend for the last half year at the rate of 10 per cent. per annum on the old or A shares, at the rate of 7½ on the B shares, and at the rate of 7 per cent. on the remaining paid-up C capital of the company, in all cases less income-tax, and the same to be paid up on or after Sept. 7.

Mr. E. WADDINGHAM seconded the motion.

The CHAIRMAN expressed the pleasure and honour he felt in presiding over this, the largest meeting of shareholders ever held in connexion with that company since its establishment. It would be within their recollection that, in considering the position and prospects of the company, he once or twice predicted a prosperous career, and that the profits would gradually increase year by year. Experience had fully justified all he had said, and the balance-sheet which he now had the pleasure of laying before the meeting bore witness to the prosperous condition of the company. Possibly there were some shareholders present who had little conception of the kind of place Hartlepool was; but they had only to take a leisurely walk through the district to find how great and important a place it had become. The number of manufactories that had sprung up of late years, and their extensive character, were cause for surprise, even on the part of shareholders who were resident in the locality. He would advise them to take a walk as far as Hart and Hurworth Burns, and they would learn whence the soft water was obtained. They would also see the additional ground that the directors had secured under the parliamentary powers which the shareholders authorized them to acquire. They might also see what an excellent hard water supply the company possessed. He had no hesitation in saying that the water was as good as any person could desire to drink. The new water-tower was nearly completed; and he might tell the meeting that this was an undertaking that the directors felt proud of having accomplished. To build that tower was, in his judgment, one of the best things the directors ever did. It was worthy of remark that the means for purifying the gas had been improved. The purifying apparatus had not only been extended, but it had been designed on the latest principles; and he anticipated that a great saving would be effected by this means.

Mr. CLEMESHA, alluding to the proposed extensions, asked what was the estimated capacity of the storeage reservoir at Hurworth when full.

The ENGINEER (Mr. Fenwick) replied that when the works were carried out that were contemplated, the reservoir would hold 120 million gallons; and, although it had not yet reached that quantity, he calculated that the consumption would soon mount up to one million gallons per day, and there would be a supply for 120 days. But the company would not rest satisfied without being prepared to meet a consumption of two millions of gallons. They could now guarantee a constant supply to all the manufactories in the district; and, with a 120 days supply, they would be better off than ever they were before. The Hart storeage would afford an additional supply of 21 million gallons. The parliamentary estimate was £45,000 for the entire works; and that would be more than ample. He should say that this addition to the works would be the cheapest part of the undertaking.

Mr. CLEMESHA: What is the average daily consumption?

The ENGINEER: If you speak of our soft water consumption, I may say that in 1864 the water sold for business purposes was 28 million gallons for the year. In 1867, when we got our first Act for a soft water supply, it was 66 million gallons. Last year the consumption rose to 276 million gallons, all of which was for trade purposes alone.

The motion for the adoption of the report and the declaration of the dividends was then carried unanimously.

The retiring directors, Messrs. Oldham and Lawrenson, having been re-elected,

Mr. CLEMESHA proposed—"That, having regard to the large increase in the business of the company, the maximum dividend paid, and the consequent responsibility of the directors, this meeting is of opinion that their remuneration in future should be £2 each per meeting attended."

Mr. W. R. E. WADDINGHAM seconded the motion, which was carried unanimously.

Mr. J. H. Bell was elected auditor in the place of Mr. W. Richardson, and in accordance with the intimation in the report, the CHAIRMAN proposed that the salary of the secretary (Mr. Trewbitt) be advanced from £300 to £500 per annum, he having undertaken to serve the company for that sum for the ensuing term of seven years.

Mr. J. GREY seconded the motion, which was carried unanimously.

The SECRETARY acknowledged the vote in appropriate terms.

The proceedings terminated with the usual compliment to the chairman.

TYNEMOUTH WATER SUPPLY.—At the monthly meeting of the borough of Tynemouth Corporation, held on Friday, the 28th ult., it was resolved, by the casting vote of the mayor, to have a valuation of the water-works of that town taken, with a view to their ultimate purchase. The scheme is very strongly opposed, however, by a very large and influential section of the inhabitants.

CANTERBURY GAS AND WATER COMPANY.

The Half-Yearly Meeting of this Company was held on Friday, Aug. 28—Mr. P. MARTEN in the chair.

The following is the directors report:—

The statement and balance-sheet of the company's accounts for the half year ending the 30th of June last are herewith submitted for the shareholders consideration.

The amount of net profits made during the half year, added to the interest on deposit, amounts to £1733 16s. 3d.; the balance of profit and loss brought forward from the last account, after payment of the dividend and interest on the mortgages, is £1063 15s. 2d.; making together £2797 11s. 4d.

The shareholders at the last half-yearly meeting having determined to provide for a new condensing apparatus and scrubber out of the above-mentioned balance, the same have been ordered and are now in course of erection under the superintendence of Mr. Robert Jones, C.E.

The amount of additional capital authorized to be raised by the creation of 400 new A and B shares of £10 was fully subscribed for. The contractors are now delivering portions of the new engine and pumps, and your directors trust that during the autumn these works will be satisfactorily completed.

Your directors, considering that the alterations in the plant at the gas-works, before referred to, will absorb the balance set apart for that purpose, beg to recommend that a half year's dividend at the rate of 6 per cent. per annum be paid on the capital stock and A and B shares fully paid up, and that interest at the rate of 6 per cent. per annum be paid on the amount called up on the 400 shares from the respective times of payment to the end of the half year—such payments to be free from income-tax.

The CHAIRMAN, in moving the adoption of the report, said he had very few remarks to make. He thought he might reasonably congratulate the shareholders that they had got through so unexampled a period so well—he meant, of course, unexampled in regard to the price of coal. Again, their residuals had for some reason or another fallen in price, and here again there was a loss of income. But with regard to the future he might say that they had made a contract for coal on favourable terms, and there was reason to believe that tar and ammonia would realize increased rates. Under the circumstances he had alluded to he thought the shareholders might congratulate themselves upon the condition of the undertaking.

Mr. FLINT seconded the motion.

Mr. J. KNOWLER inquired how it happened that the half-yearly meeting was later than usual. It deferred the declaration of the dividend, which was a matter of importance to some shareholders.

The CHAIRMAN explained that the labour of taking the rentals, which could not be commenced until the 15th of June, occupied fifteen days, that it took a month to prepare the accounts, and that other necessary business created delays which rendered it impossible—due regard being paid to the interests of the shareholders—to call the meeting earlier.

The report was unanimously adopted.

A proposition that a dividend for the half year at the rate of 6 per cent. per annum be declared, having been put and carried, some other formal business was transacted, and the proceedings closed with a vote of thanks to the chairman and directors.

WREXHAM WATER-WORKS COMPANY.

The Ordinary Meeting of Shareholders was held on the 31st ult.—Mr. W. OVERTON in the chair.

The following report was presented:—

Capital Account.—During the year, the final call of £2 per share upon the 300 new shares has been made, the whole of which, with the exception of £10, has been received. The additional charges, amounting to £1315 15s. 2d., are principally for parliamentary expenses, incurred in obtaining the Wrexham Water-Works Act, 1874.

Revenue Account.—The water-rent account for the year ended the 30th of June, as compared with last year, shows an increase of £191 14s. 6d. The total receipts for the year, for water and profit on fittings amount to £1844 18s. 11d. After payment of the usual charges, the interim dividend for the half year ended December, 1873, and interest on loans, the accounts show a balance on net revenue account of £567 18s. 10d., and the directors therefore recommend the declaration of the second half year's dividend upon the paid-up capital of the company, at the rate of 5½ per cent. per annum (free of income-tax), leaving a balance of £76 17s. 7d., to be carried forward to the next account.

Water Supply.—During the year 48 dwelling-houses have been added to the list of consumers, making a total of 1673 now supplied. We have pleasure in reporting that the bill for powers to extend the company's district, and to construct new works, which was approved by the shareholders in February last, passed through Parliament successfully, although strongly opposed, and received the Royal Assent upon the 30th of June. The engineers of the company have been instructed to proceed with the plans for the new reservoirs, and as soon as the necessary increase of capital has been voted by the shareholders to cover the cost, the works will be proceeded with the utmost despatch.

The present extraordinary drought which has seriously affected other water companies has also severely taxed the resources of this company, and the directors have been compelled to seek an auxiliary supply, in order to maintain the present constant service to the district.

The CHAIRMAN moved the adoption of the report, and after referring to the opposition the company had had to encounter in their late application to Parliament, spoke of the new works to be executed. The increased storeage would consist of two reservoirs, one of which would be constructed as soon as possible, and for the other they might if they chose take a period of seven years. Their working expenses compared favourably with other companies, being only 27 per cent. of the gross receipts.

Mr. LEWIS seconded the motion, which was carried unanimously, a dividend at the rate of 5½ per cent. declared, and the retiring directors and auditor re-elected.

The meeting was followed by an extraordinary meeting of the shareholders, held for the purpose of enabling the directors to raise the sum of £10,000, to defray the expenses of the construction of the new reservoirs.

The CHAIRMAN explained how they proposed to raise the amount. There were 300 £10 shares not called up. These would be issued at once, after which the directors would be in a position to borrow £1000. Three hundred new £10 shares would be created, which would enable the directors to borrow another £2000, if required. They did not expect to require more than £8000 in all.

On the motion of the CHAIRMAN, it was then unanimously agreed that the directors be empowered to raise £10,000.

On the motion of the CHAIRMAN, seconded by Mr. LOW, the following resolution was then unanimously agreed to:—"That the directors be empowered to convert into consolidated stock the ordinary share capital authorized to be raised under the company's Act, 1864, to call in and cancel the certificates, and in lieu thereof issue other certificates."

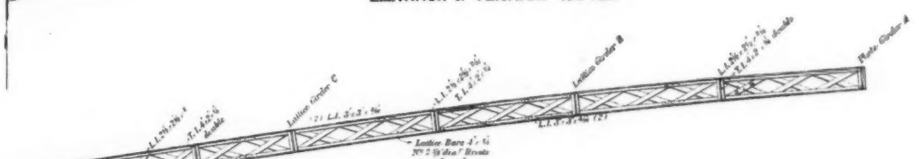
A vote of thanks to the chairman and directors closed the proceedings.

OLDHAM WATER SUPPLY.—A special meeting of the Oldham Town Council was held on Wednesday last, to consider the proposal to ask Parliament for an amended water-works scheme. Mr. Wrigley moved that the Gas and Water Committee be authorized to promote a bill in Parliament for the abandonment of certain portions of the present Denshaw scheme, the construction of additional works at Denshaw, and the procurement of the necessary powers. He stated that the borrowing power of the corporation for its water-works was exhausted, with the exception of about £45,000, which was inadequate for the work to be done. Mr. Bateman, C.E., entered into a lengthy explanation, in which he showed that by the proposed amended scheme an additional water supply of 2,100,000 gallons could be secured, instead of an additional supply, as before proposed, of 1,300,000 gallons, while the cost would be no more. Mr. Wild, on the ground that the council had not had time to duly consider the matter, which was being pressed forward in a hurry, moved the adjournment of the debate for a fortnight, and Mr. Clegg seconded the motion. The amendment was rejected by 21 to 5, and the original motion was carried unanimously.

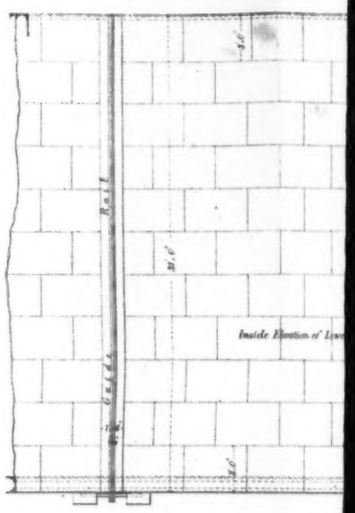
NEWCASTLE & GATESHEAD GAS COMPANY.

REDHEUGH WORKS.

ELEVATION OF TERTIARY RAFTER

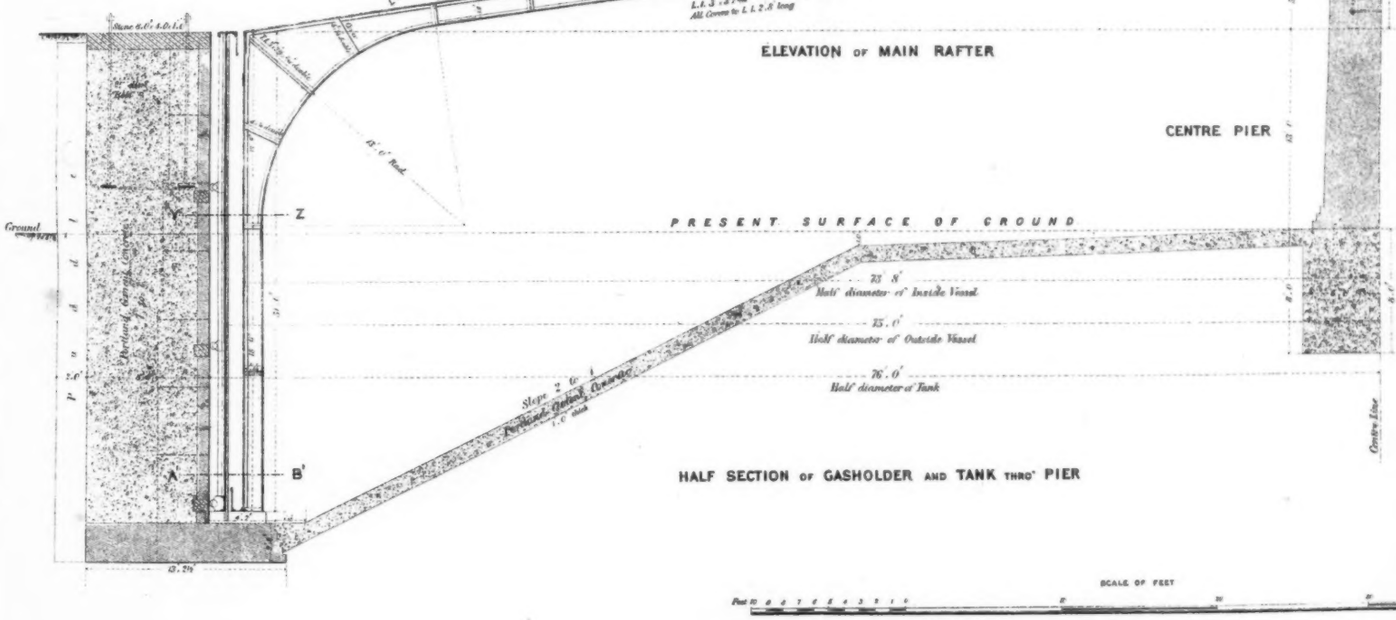


ELEVATION OF SECONDARY RAFTER



ELEVATION OF MAIN RAFTER

QUARTER PLAN TOP CENTRE PLATE



CENTRE PIER

PRESENT SURFACE OF GROUND

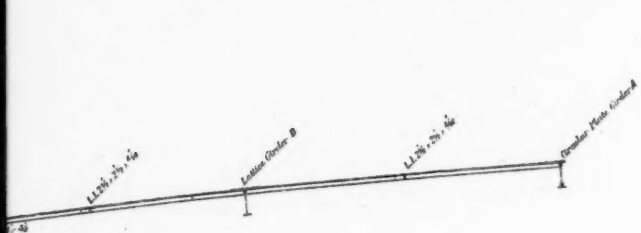
HALF SECTION OF GASHOLDER AND TANK THRO' PIER

SCALE OF FEET

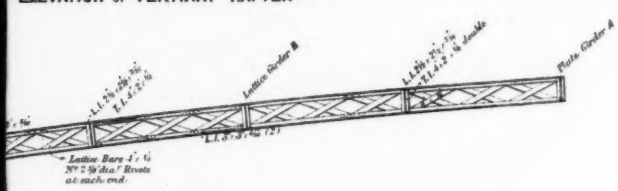
Whitehead & Bass, Photo Litho to the Queen, 236, Holborn.

NEWCASTLE & GATESHEAD GAS

REDHEUGH WORKS



ELEVATION OF TERTIARY RAFTER



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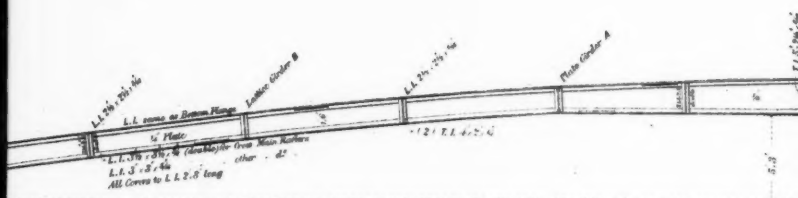
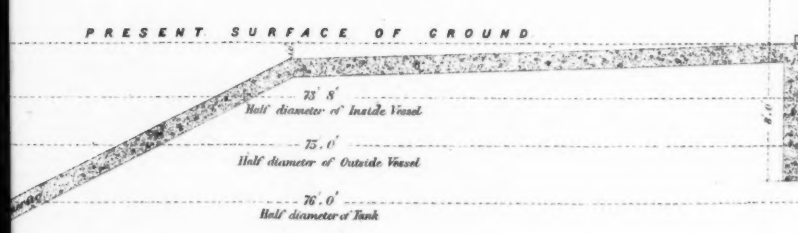


ELEVATION OF MAIN RAFTER

CENTRE PIER

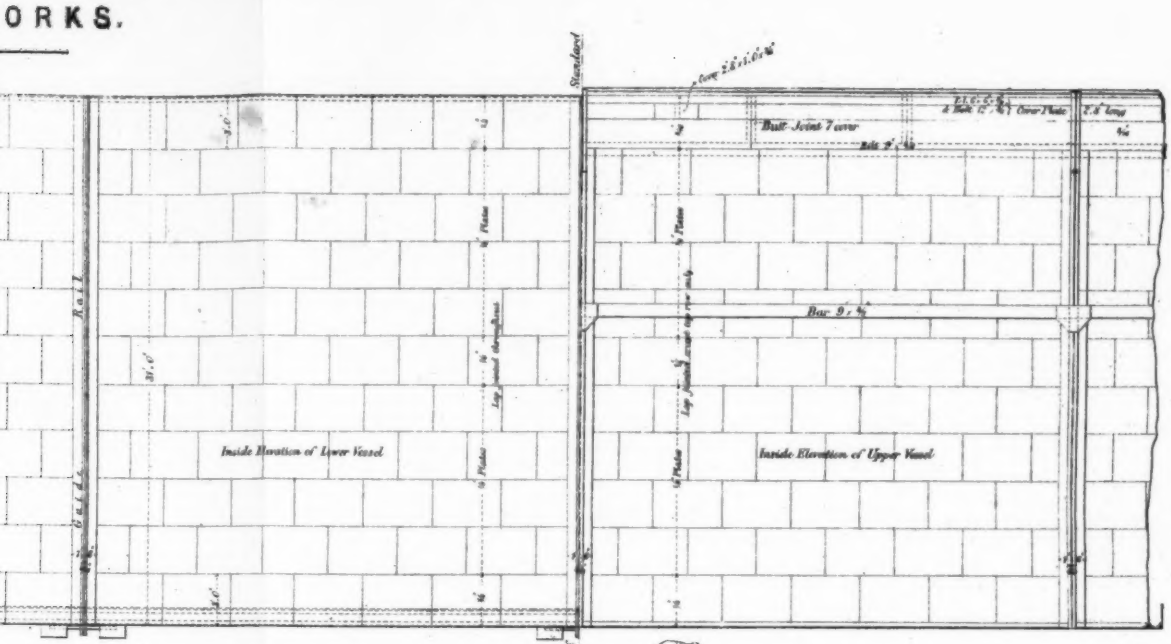


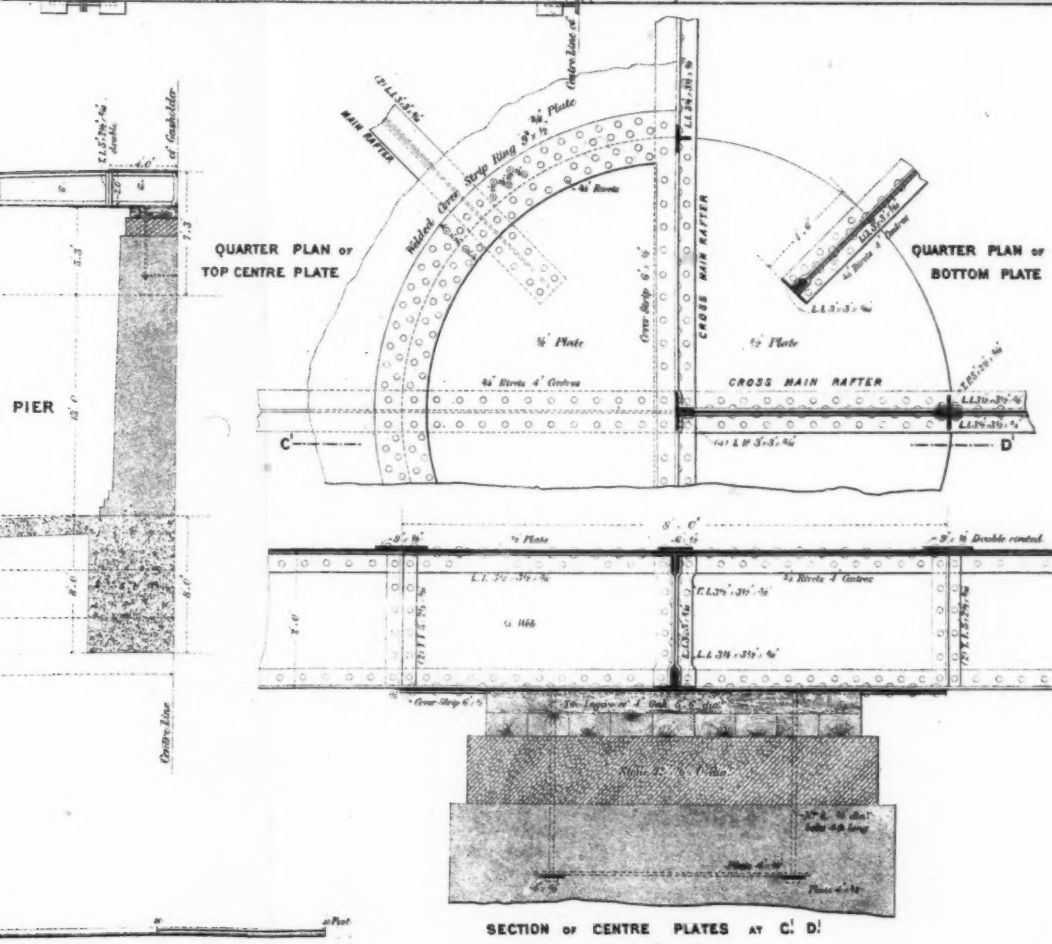
HALF SECTION OF GASHOLDER AND TANK THRO' PIER

SEP. 8TH 1874

GAS COMPANY.

ORKS.





DERBY WATER-WORKS COMPANY.

The Ordinary General Meeting was held at the Company's Offices, on Saturday, Aug. 29—G. GASCOYNE, Esq., chairman, presiding.

The following is the report, which was taken as read:—

The directors have much pleasure in submitting to the shareholders a statement of the company's accounts for the past half year. Although, in common with all other companies, they have still had to contend with demands for increased wages, and the high price of coal and other materials, they are glad to meet the proprietors with a balance-sheet, which, under the circumstances, they trust will be deemed very satisfactory. The gross receipts amount to £5433 10s. 10d., being £364 14s. 11d. more than those in the preceding half year, and £496 19s. 1d. above those of the corresponding half year in 1873. The revenue expenditure is £2565 18s. 2d., being £343 1s. 5d. more than that of the previous, and £357 11s. 5d. more than that of the corresponding half year. The net profit realized is £2867 12s. 8d., being more by £80 10s. 7d. than the average profits of the two preceding half years; and adding thereto the surplus of £1990 1s. 11d. brought forward from the last revenue account, £4857 14s. 7d. now remains available for dividend, which the directors recommend to the meeting at the usual rate; and as this will absorb about £2980, a net surplus of £1877 14s. 7d. will remain to be carried to the credit of the next half year. The contingent-fund at our disposal, in addition to the above, amounts at this time to £3220 18s. 6d. As the new engines have been in full working order for the last six months, the old ones have been subjected to a course of thorough repair. This, owing to the great and long-continued strain imposed on them until the new engines were completed, has been, as was anticipated, a very costly affair, but the board at length have the satisfaction of possessing two complete pairs of engines and boilers in a very satisfactory condition. The contracts for the new high-level reservoirs and filter-beds are somewhat slowly but steadily progressing, and the directors anxiously hope that they will be completed by the time specified in their conditions; but this, owing to the strikes and disputes now continually arising amongst workmen, is a matter which can only be solved by further lapse of time. The general position and prospects of the company are most encouraging, and none will be more gratified than the directors themselves, when all these new works, with their responsibilities, shall have been finally completed, and brought into full operation.

The CHAIRMAN, in moving that the report and balance-sheet be received and adopted, said they appeared to have given such satisfaction that the shareholders had not felt it necessary to come and make any further inquiries. They appeared to feel that they had sufficient confidence in the management and the endeavours and exertions which have marked the course of the directors during the past. A word or two he ought nevertheless to say as to what they had done. Since their Act was passed they had spent £44,000. At the time of the passing of the Act their capital amounted to £61,000. It was now £105,000. That outlay had entailed an increase of £1380 for dividends. They had necessarily entered into further contracts for reservoirs, new iron mains for bringing the water, and so on; notwithstanding that all this money was just then non-productive and non-remunerative, because the works at present were not finished, and therefore no additional water could be brought down—notwithstanding all this they could pay their usual dividend out of earnings, and carry over something like £1900 to the next half year. It was what few other water companies had done. Many companies had been in great difficulties, and the supply had been restricted. They had none of this, and as the directors had something to do with the good results, which were evidenced by this state of things, success was partly on account of their management. They would observe that although the sum of £1877 had been carried over, there had been additional expense during the half year with regard to their engines. The old engines were worn out, and they would find in the current balance-sheet what they would not find for two years past—a rather large outlay—£404 for engines. The only matter which was affording the directors some anxiety was the waste of water; every measure had been taken, but it appeared somehow as if nothing would reach the consumers. Many thousands of taps were found to be all running together. It was a difficulty which presented itself to all companies, and probably no satisfactory results would be arrived at until the domestic supply was no longer charged on the rental, but by the meter scale, on a satisfactory tariff. That would make all consumers take an interest in the economical use of water. They had protested against the waste of water by the local board's carts, which were sometimes watering when it rained. In these days when dividends were so low, owing to strikes, disputes among workmen, the price of material, and difficulties without end, the directors had so far succeeded that they were enabled to come before the meeting with the full amount of dividend, and he had to ask them, by their unanimous resolution in receiving the report, to show their continued confidence. Much more could be said if it were necessary. As to the progress they were making with the works, it was represented as "slow," but still satisfactory. If any one objected to these matters appearing so slow, it would be found, on investigation, that they had no means of driving things to a termination, but that they must patiently await the chapter of events. Some questions would probably be asked, but he would formally move the reception of the report.

The Right Hon. Lord SCARSDALE seconded, and the resolution was agreed to.

The CHAIRMAN then moved—"That a dividend be, and hereby is, declared on the shares of this company, of £1 5s. per share on the original shares, being at the rate of 10 per cent. per annum, free of income-tax; and of 6s. 1½d. on the new £12 10s. shares, being at the rate of 7 per cent. per annum, also free of income-tax, for the half year ending June 30, 1874, to be payable on Sept. 1 next."

Mr. H. F. GISBORNE seconded, and the motion was carried.

In reply to a shareholder, the CHAIRMAN said he hoped no call would be made this year. They had a bank which was bountiful, capable, and willing to advance them without bond or security; under those circumstances, they would pay far less per cent. than by calling for money from the shareholders. There would be no call for the present.

Mr. KNIGHT asked whether the cost of the repairs of the old engines came from the capital or the revenue account.

The CHAIRMAN said it would be seen from the balance-sheet that it was debited to the revenue account. The chairman said he might also state that there had been a large increase in the number of houses added to the company's list during the past half year.

Mr. WOODWARD moved a vote of thanks to the chairman, directors, and auditors.

Mr. W. BAKER seconded, saying that the shareholders had every confidence in the directors, or they would have attended in far greater numbers that day; still, he thought the circumstances called for something more than an ordinary vote of thanks, and it would have, perhaps, been a better compliment to the board if the shareholders had attended in larger numbers. Things were progressing in a very satisfactory way, and he did not think there was a question they could ask.

The CHAIRMAN, in acknowledging the vote, said there had been a great many things during the half year which had caused them much trouble and anxiety, and some affairs had been perplexing enough; and if there had not been great efforts used to sustain the management—if unusual exertions had not been made to accomplish some amount of hard work—things would not have been so congratulatory. Every member of the board had been most anxious at all times to compound for difficulties by greater attendance, diligence, and study, for the times were rather awkward to deal with, and they had fallen in with a troublesome period. Yet, if they had been allowed, in the first instance, to have taken their own course, and had a free run before Parliament, some of the difficulties would not have arisen. However, they were in a good position, and would ere long reap the advantages accruing from the outlay of their £40,000. He thanked them cordially for the vote, and he could assure them that the board would continue to do its duty.

GLASGOW CORPORATION GAS-WORKS.

The Town Council of Glasgow met on the 3rd inst.—the LORD PROVOST presiding.

The annual report of the Gas Committee came before the court on the reading of the minute of a special meeting of the committee held on the 20th ult. It was as follows:—

The committee beg to submit to the Town Council their fifth report and balance-sheet. These embrace the period from the 1st of July, 1873, to the 31st of May, 1874, the date of balance having been altered from the 30th of June to the 31st of May, as resolved by minute of the 17th of September last.

The profits on the revenue account amount to £72,294 15s. 2d., as compared with £33,177 7s. 11d. of the previous year, and after writing off £8828 11s. 1d. to capital for depreciation of works and meters, there remains to be carried to profit and loss account the sum of £63,466 4s. 1d.

The obligations which your committee had to provide for during the year were as follows:—

1. Annuities on stock	£34,327	19	4
2. Interest on borrowed money	25,475	8	1
3. Sinking-fund	6,296	7	10
	£66,099	15	3
To which falls to be added the debit balance, as shown last year	11,744	7	8
	£77,844	2	11

The profits, as above, have met this to the extent of £63,466 4s. 1d., leaving a deficiency of £14,377 18s. 10d. It should be explained here, that while the revenue sheet now submitted contains only eleven months expenditure, it contains twelve months revenue or gas-rental, and that, had the balance been struck as at the 30th of June, the available profits would have been about £12,000 less. The committee deeply regret this result, and it has taken them a good deal by surprise; but it must be explained that, while the present price of gas is 5s. 5d., the average rate available for the year has only been 5s. 1d. per 1000 feet. In these circumstances, and as the price of cannel coal continues very high, the committee cannot at present recommend any reduction in price.

The consumpt of gas during last year has been considerably less than was anticipated, and shows a falling off, as compared with the previous year, of 4,289,000 feet, the figures being—for 1873, 1,310,100,000; 1874, 1,305,811,000. This is mainly attributable to the brightness of the weather during the winter months, and the number of working hours being generally reduced. It will be observed that the sinking-fund now stands at £14,513 11s. 9d.

The additional money borrowed on mortgage since the last report is £169,832, which makes the increase to capital, since the gas-works were taken over by the corporation, £510,374, and the total capital now amounts to £1,044,639.

Works.—Dalmarnock Station.—No additions have been made at these works during the past year, but considerable renewals and repairs have been executed on many portions of the works, and this station is now in a better condition for manufacturing gas than it has been at any time during the last five years. This work is capable of producing 5,000,000 cubic feet of gas in 24 hours.

Dawsholm Station.—The works at Dawsholm were not completed in time to be of any service during the past winter. The works are now in operation, and will, during the next winter, be at full work. Their producing power is 3,000,000 cubic feet in 24 hours.

Tradeston Station.—No additions have been made at this station, which is in good working order, and capable of producing 2,500,000 cubic feet in 24 hours.

Partick Station.—The works here are also in good order, and capable of producing 720,000 cubic feet in 24 hours.

Townhead Station.—Gas is not now being manufactured at this station, and it has been agreed to dispose of the ground and material as soon as possible.

The total producing power of the works is 11,000,000 cubic feet in 24 hours. The greatest consumpt in 24 hours last winter was 9,162,000 cubic feet, showing a surplus of producing power of 1,838,000 cubic feet; 24,644 yards of mains have been laid during the year.

The number of meters in use at the commencement of the year was 106,483; at the end of the year, 111,541, showing an increase of 5058.

In the minute of the sub-committee on coal contracts, dated the 17th of July, it was stated that "the meeting proceeded to consider what quantity of coals, having regard to existing contracts, should be contracted for for the current year, when, after hearing Mr. Foulis's explanations, it appeared (1) that the quantity of coal already contracted for, but not yet delivered, amounts to about 109,318 tons, and (2) that the present stock amounts to about 30,000 tons, of which, however, only 13,000 tons can be regarded as available during the current year. The sub-committee delayed going further into the matter till a subsequent meeting."

The LORD PROVOST, in moving the adoption of the minutes, said the gentlemen connected with the gas department felt much disappointed as to the result of last year's working. The difference of profit between this and last year seemed to be a very large sum, being £72,974 in 1873-4, as compared with £33,177 in 1872-3. These figures, however, did not fully explain the state of matters, because, although there was £33,000 in the former year, there was a deficiency of £25,000 to make up the sum required to pay the annuities and borrowed money—in all £58,000. But there still remained a difference between the £58,000 and the £72,000 of about £14,000. Looking to the accounts, he found that there had been about £9000 of additional interest in consequence of the increase of capital, about £1700 additional for the sinking-fund, and £5670 in addition for depreciation, making in all £15,370. He was sorry to say that the difficulties last year had arisen from the exorbitant price of coals. He found that last year they had paid for their coal not less than upwards of £70,000 more than they did two years ago. The exact figures were—in excess of 1871-2, £70,779; and of 1872-3, £27,285. In 1871-2 the price of coal was 13s. 6½d.; in 1872-3, 17s. 10d.; and last year, 20s. 4½d. Besides, in the belief that the consumption would go on increasing with the growth of the city, it was deemed necessary to bring up the producing powers of the company's works so as to be able to furnish a supply of gas to the extent of 11 million cubic feet per day. Instead, however, of the consumption being 11 million, no increase had taken place last year; but, on the contrary, there was a falling off to the extent of about 5 million cubic feet. This was accounted for by the brightness of the weather, and also by the shorter working hours of the operative classes. It was evident that they were too long in raising the price of gas, because, although it had been increased to 5s. 5d., it would be seen from the report that the average rate received during last year had not been more than 5s. 1d. per 1000 cubic feet of gas. He might say also that they had had great trouble with their coal contracts. For a considerable time it was next to impossible to get contractors to supply the necessary quantities, because their men would not work. Accordingly, the corporation were obliged in many cases to go into the market and purchase coals, debiting them against these contractors. He hoped, however, that matters had now got into a more satisfactory state, and he looked forward to a considerable increase of profit during the current year beyond the one now ended. Seeing that the deficiency of £14,000 still existed, the committee did not think it would be desirable to make any alteration in the price of gas at present; but they hoped that the price of coals would decrease still further, and as soon as they had an opportunity of seeing how they got on, possibly in a few months, if it was in their power to lower the price, they would be very glad to do so.

Mr. W. MILLER, in seconding the motion, said he wished to call attention to one part which was of a very satisfactory nature in the midst of many that were of a contrary description. His lordship stated that there had been a diminution in the consumption of gas, but that was not strictly accurate. There was a diminution certainly in the quantity of gas manufactured to the extent of about 4½ millions, but it was most satisfactory to find that there was a decrease in the leakage of gas to the amount of no less than 16 million cubic feet in the course of the year. There was, therefore, actually an increase in the consumption of about 12 million. That, however, was not at all what it ought to have been, or what might reasonably have been expected. But the difference was rightly accounted for by the brighter weather; in truth, the state of the weather, especially in winter, affected wonderfully the quantity of gas used. It was most satisfactory that the result of their efforts in laying new pipes during the last three or four years was now coming to be seen in a very marked

manner. No doubt the leakage was still enormous, amounting to nearly 300 million cubic feet of gas; but when they looked to the progressive diminution of the last three years, he thought they would be satisfied that everything possible was being done to decrease the quantity. In 1871-2 the leakage was 21¼ per cent.; in 1872-3, 19¾ per cent.; and in 1873-4, 18½ per cent., or a diminution at the rate of about 1 per cent. per annum. They were all disappointed at the result of the year's work, and he regretted exceedingly, for his own part, that it was not possible to reduce the price of gas at this time.

Mr. FINLAY complained that the amount of coal used in the works was not set forth. It would be most desirable, he thought, that the working expenses, the quantity of coal used, and the quantity on hand, should be reported monthly. Gas manufacture had its seasons of activity as well as of dulness, and if they were without any means of making comparison, they retained only a very loose hold upon the expenditure.

After some observations by Messrs. COLLINS and MACKENZIE,

Bailie WALLIS said the quantity of coal used this year was 181,499 tons, the product being 8535 cubic feet of gas for each ton, as compared with 176,820 tons used last year, with a product of 9228 cubic feet of gas per ton. The result therefore, this year in that respect was unfavourable, whilst it was unfavourable as compared with almost all other years. The difference in the product of each ton of coal was very serious, and, in his opinion, accounted for a great deal of the loss. There was no doubt that during the year the deliveries of coal were very inferior to previous years, and they had also used some 30,000 tons of shale which was found not to be satisfactory in working. It was resorted to quite as an experiment, and because coal was so scarce. With reference to the future, the report stated that they had only received an average of 5s. 1d. per 1000 cubic feet; during the current year, however, they would have 6s. 5d., which was equal to an additional £20,000 or £25,000. He was hopeful, therefore, that this, together with the reduced price of coal, would, towards the close of the year, make up the deficiency shown in the accounts. It was scarcely right to look upon the results of the working for the last two years as absolute loss, because the money which ought to have been under the control of the Gas Committee was at present in the hands of the gas consumers, with the exception of what had been lost, and they certainly had lost very seriously through the non-delivery of coals during these years, and especially during 1872-3.

Mr. ADAMS sympathized very much with the gentlemen who managed these gas-works. The accounts were made up in a very straightforward manner, and for himself he would rather show the loss frankly and openly, as they had done, than cook accounts with the view of concealing a deficiency. He had no doubt that by-and-by the new works would produce gas at a much cheaper rate than they had been able to do hitherto.

The minutes were then confirmed, the report and statement of accounts being allowed to lie on the table till next meeting.

MANCHESTER (CORPORATION) GAS SUPPLY.

At the Meeting of the Manchester City Council, on Wednesday, Sept. 2—Alderman BOOTH (in the absence of the mayor) presiding,

Mr. MARSHALL asked the chairman of the Gas Committee (Alderman King) whether, considering the great fall which had taken place in the prices of coal and cannel, as well as the circumstance that the committee had lately come into something like £20,000 from other sources, the committee could see their way to a reduction of the price, for which the consumers were very anxiously waiting.

Alderman KING said: I have had no notice of this question; but I may tell Mr. Marshall that the Gas Committee, of course, make contracts for their material, and they have not yet purchased anything at a reduction in price. I believe that at the present time the average price paid for our material would not enable us to sell our gas at the price we are now doing; it is simply by the advantage of contracts we have previously made, and of which we are getting the benefit, that we are enabled to sell gas as low as we are now doing. The council will bear in mind that we are selling gas at a considerably less price than it is now sold in Salford, and less by some 8d. or 10d. per 1000 feet than in Liverpool.

NEWCASTLE AND GATESHEAD GAS COMPANY.

NEW GASHOLDER AT REDHEUGH.

In the JOURNAL for Aug. 25 we gave a description, with drawing, of the tank for this holder now in course of construction, and we now proceed to describe the holder itself. As we stated before, the whole of the extension works at Redheugh are being carried out after the designs and under the superintendence of Mr. V. Wyatt, engineer, of Westminster.

The gasholder is wholly composed of wrought iron. It is of telescopic form, and consists of two parts. When raised to its full height it will be 60 feet 6 inches from the under side of the curb of the lower vessel to the top curb of the upper vessel.

The lower vessel is, as shown in the accompanying drawing, 31 feet in height, over all, and 150 feet in diameter. It is composed of a bottom curb arranged with the following plates and irons:—Two plates placed horizontally 1 foot asunder, each 7 inches by ½ inch, and connected with the lower plates of sheeting by two angle-irons, each 2½ inches by 2½ by ½ inch, forming an external trough in section. The top curb is formed of one horizontal plate 1 foot 4 inches by $\frac{5}{16}$ inch; three angle-irons 2½ inches by 2½ by $\frac{5}{16}$ inch, which connect the previous plate to the side plates; pendent plate for grip 18 inches by ¼ inch, with a rounded iron 3 inches by 1 inch at bottom of the same, covered at joints with covers 1 foot 6 inches by 3 inches by ⅜ inch inside, and riveted thereto. The curbs are built with butt-jointed plates and irons having covers at all points 2 feet 8 inches long, of the sectional area of the plates joined, with the requisite number of rivets each side of joint. The cover plates to pendent plates to grip are 1 foot 6 inches by 1 foot 6 by ¼ inch, and are placed on the inside thereof.

Round the circumference of the lower vessel, and on the outside of the sheeting plates, there are 16 posts, spaced equi-distant apart, centre to centre, each composed of two angle-irons, each 5 by 3 by ⅜ inch, riveted to sheeting. These angle-irons are to be in one length for the entire height of the vessel, or should it be found necessary to break them up into two lengths, the points are to be formed about half way up, and to break with each other 3 feet, with cover-plates and irons, 2 feet 8 inches long, secured to each other, and to the $\frac{5}{16}$-inch vertical plate forming the back of the post, 1 foot 6 inches wide. There are two rollers in the height of the lower vessel, exclusive of those on the top and bottom curbs, carried by two jaw-plates 9 inches by 8 inches by ½ inch each, riveted by four ⅝-inch rivets to the vertical plates of the posts, and in which the axis of the roller will operate. The rollers are of wrought iron, 6 inches in diameter and 4½ inches broad.

On the inside of the vessel, and centred with each post, there are 16 guide rails running the entire height of the lower vessel, and for 8 inches below the lower curb. These rails weigh 40 lbs. per lineal yard, and are riveted to the $\frac{5}{16}$-inch plate at the bottom flange with ⅝-inch rivets, 6-inch centres, on both sides of web, the rivets breaking joint on either side. The specification provides that each rail may be in two lengths for the height, and be connected at the joint by two fish plates 1 foot 6 inches long by 2 inches by ⅜ inch, and six rivets, to form a continuous guide.

The plates on the side of the lower lift are 3 feet wide, and ¼-inch thick, for the top and bottom rows next to the curbs; the remaining plates average 2 feet 9 inches by ¼-inch thick, except the middle tier of plates, which are ½-inch thick, and the vertical strip riveted to the back of each post, which is 1 foot 6 inches wide, $\frac{5}{16}$-inch thick, and of the entire height of the vessel, in two plates, the joint being a butt one, and covered by an external cover strip, 1 foot 6 inches by 1 foot 6 inches by $\frac{5}{16}$-inch. The thinner plates are not less than 10 superficial feet in area, and the thicker plates not less than 15 superficial feet.

The upper gasholder, as shown in the drawing, is 147 feet 4 inches in diameter, and 31 feet high at the sides. The dome to this upper lift is built with its trussing to a segment curve, having the span of 147 feet 4 inches, and being 7 feet 3 inches rise at centre. The holder is composed of a cupped bottom curb, having a horizontal plate 1 foot 4 inches by $\frac{5}{16}$-inch, three angle-irons 3 inches by 3 inches by ⅜-inch, connecting the same to the lower tier of plates, and to the vertical plate of the cup. The vertical plate is 1 foot 6 inches deep, ¼-inch thick, and covered at the joints with plates 18 inches by 18 inches by ¼-inch, at the top of which there is riveted a rounded iron, 3 inches by 1 inch. There is an external belt also 9 inches by $\frac{5}{16}$ inch round the gasholder at the first joint of the plates, 3 feet below the top, which is double riveted, and covered at the joints by plates 2 feet 8 inches long, to form a continuous ring. The several plates and irons forming the curbs break joint with each other more than 3 feet, and are in lengths not less than 20 feet, being similar as to joints and covers to those described for the curbs to lower gasholder previously.

The circumference of the upper gasholder is stiffened by 16 posts or vertical supports, equally spaced, centre to centre, and 18 feet 6 inches high to the springing of the arched rafters. Each of these posts is formed of four angle-irons 3 inches by 3 inches by $\frac{5}{16}$ inch (except the four posts under the through cross rafters, the angle-irons of which are 3½ inches by 3½ by ⅜ inch), and a web-plate 1 foot 3 inches by ¼ inch, two of the angle-irons, forming the back part thereof, being riveted to the back plate, 1 foot 6 inches by $\frac{5}{16}$ inch, forming the skin of the gasholder at this part. The web-plates are in one length, and are secured to the rafters near the springing line of the same by two T-irons 5 inches by 2½ inches by $\frac{5}{16}$ inch, one on each side. The bottoms of the posts are secured to the lower curb by two angle-irons, each 2½ inches by 2½ by $\frac{5}{16}$ inch, and a bearing-plate under the posts and lower curb, 2 feet 4 inches by 1 foot by $\frac{5}{16}$ inch. The angle-irons are covered at the joints as previously described. At the level of the springing line of the main rafters, 12½ feet below the top curb, there is a vertical plate 9 inches by ⅜ inch running round the circumference of the upper gasholder, and attached to the inside angle-irons of each post by cover plates 2 feet by 1 foot 6 inches by ⅜ inch, having sixteen ⅝-inch rivets through same. This plate is made in one piece without joint from post to post, and once, midway in the height of the post, there is a double strip of metal 4 inches by ½ inch on each side of the web and angle-irons to stiffen the same, but there is no joint at this part.

We propose to give three more drawings, which, with the further descriptions appended, will sufficiently explain the principal features of this important construction.

WAKEFIELD WATER BILL.—On Friday, Aug. 28, a meeting of the millowners upon the river Don and Little Don was held at Sheffield to receive a report of the committee appointed by them to oppose the Wakefield Water Bill which was before Parliament during the last session. The report stated that during the progress of the opposition the promoters made an attempt to compromise with the millowners. The terms, however, which they offered were so very inadequate that the committee were unable to entertain them. The total costs of the opposition were, so far as they had been estimated, about £5000. £788 5s. 3d. had been paid out of the balance in the bank to the credit of the millowners, leaving about £4300 to be raised. The committee, in concluding their report, while congratulating the millowners upon the successful issue of the struggle, could not but view with regret that they had been obliged to incur so large an expense in simply defending their rights against an alien company, which had no business, in the first instance, to come into the Don watershed, and whose bill should not have been allowed to have passed the House of Commons.

SALFORD WATER SUPPLY.—At the monthly meeting of the Salford Town Council, on the 2nd inst., a resolution was submitted by Alderman Gendall, as follows:—"That the charges for water supplied up to 3 million gallons per quarter remain as at present, and that the discount of 10 per cent. be continued on consumptions of that quantity and under. That when the consumption is above 3 million gallons per quarter the charge be 6d. per 1000 gallons for every 1000 gallons in excess of 3 millions, and that no discount be allowed." Alderman Davies asked for an explanation of the resolution. Alderman Bromiley said it was the intention of the committee to charge consumers who consumed over 3 million gallons per quarter, and of whom there were only two or three in the borough, at an increased rate, but to deduct 10 per cent. up to that quantity. Salford had been consuming more than the quantity of water allowed by the Manchester Corporation, and it was hoped that this increased charge would check the consumption. Alderman Davies did not consider this explanation satisfactory, and he moved that the consideration of the question be adjourned, in order that the chairman of the committee might be able to give a further explanation. The amendment was seconded by Alderman Fletcher, and on being put to the vote was lost. The original resolution was then put and agreed to.

THE CARBON LIGHT.—A new and intensely white light has lately been invented and exhibited by Mr. William Day, of Ohio. A thin ribbon of carbon is suspended between two platinum poles, and covered by a globe containing dry carbonic acid gas. The ribbon receives an electric current from a battery, and while in the atmosphere of the gas becomes brilliantly incandescent. The carbon is not consumed, and the light is said to be perfectly constant. The method was invented by Professor Osborn, of Miami University, who at first thought it necessary to use very thin strips of carbon, but the light is now produced with much larger ribbons and with little combustion. The heat generated has never as yet broken the small glass globe containing the ribbon. This light being constant, and not requiring the combustion of carbon, may prove much more useful to scientific lecturers than the ordinary electric or oxy-hydrogen lights, both of which are troublesome to handle.—*Iron.*

LONGTON GAS COMPANY.—The half-yearly meeting of shareholders of this company was held on Monday, Aug. 24—Mr. W. Webberley, chairman of the directors, presiding. Mr. J. M. Darwin, the company's secretary and engineer, presented the following report, which was adopted:—"The increase of expenditure in coal, wages, materials, and repairs, and the great depreciation in the value of coke, has been such as to cause the profit on the revenue account to be much less than previous half years. The net profit and the unappropriated balance in the profit and loss account shows an amount sufficient for the payment of interest on mortgages, and the payment of a dividend of 10 per cent. per annum on the original capital, and 7 per cent. on the ordinary 7 per cent. capital, all free of income-tax, which dividend the directors recommend to be declared at the half-yearly general meeting. In the half year now current, to December next, the contract price for coal is much more favourable than the two previous half years, and your directors have entered into contracts for the sale of tar and ammoniacal liquor, higher than has hitherto been realized. Upon the results of the next half year's working, to the 31st of December next, the directors hope to show a decided increase in the profit and revenue account. Under the head of capital account, £1262 3s. 2d. has been expended in new meters, new mains, and manufacturing plant. The numerous mains in the streets were a source of great leakage, consisting as they did of the British Gas Company's and the Stoke Gas Company's old mains, besides those laid down by this company at its formation. Great pressure was also needed to give a sufficient supply of gas to the town, and under these circumstances the directors decided to substitute new and larger mains, and they have no doubt but that by the diminution of leakage, and the giving of an equable pressure throughout the town, the money will have been proved to have been well spent. On the works a new retort-bench of 42 retorts has been built, and additions are being made to the purifying plant. The directors who retire by rotation at this meeting are Mr. William Webberley and Mr. Rupert Adderley, who are eligible for re-election."

IRON AND COAL TRADES OF SHEFFIELD, SOUTH YORKSHIRE, AND NORTH DERBYSHIRE.

(FROM OUR OWN CORRESPONDENT.)

There does at length appear to be some grounds for supposing that we are on the eve of an improvement in the condition of the iron and steel trades as a whole.

This amelioration is beginning to be evinced in several quarters by the greater activity displayed at the works, and a corresponding increase in the output of raw and manufactured materials.

There can be no doubt whatever that the renewal of something like a moderately good state of trade has been brought about mainly by the reductions in the price of fuel and in wages, which have been effected during the past few months. No sooner, however, do we begin to note an improvement than there comes an ominous rumour as to an advance in the price of coal. This rise has not yet become a general one, but I hear of a good many instances, both in East Derbyshire and South Yorkshire, in which prices have been augmented to the extent of 1s. to 2s. per ton. There appears to be no reason whatever for the rise, seeing that the output is large, the men are working well and regularly, the demand is not very active, and reductions are still being made in prices in other districts.

Cleveland pig is pretty firmly held at the following figures for GM brands:—No. 1 foundry, 75s.; No. 2, 73s.; No. 3, 69s.; No. 4, 65s.; No. 4 forge grey, 58s. 6d.; No. 5 M, 58s.; No. 6 W, 57s.; refined metal, 84s.; Kentledge, 70s.; and cinder pigs, 50s. per ton, for net cash.

IRON AND COAL TRADES OF SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE.

(FROM OUR OWN CORRESPONDENT.)

The iron trade continues to improve steadily, and makers speak much more hopefully of the prospects of business. The demand for finished iron, though much below the average of the season, shows considerable buoyancy. Several of the leading firms have during the last few days received some fair orders for special qualities of iron, and, as a rule, the mills and forges are in well-sustained operation. It is generally conceded that could the standard of quotations be reduced by £2 per ton, a brisk demand would speedily follow, but such a course is quite impracticable, until the rates of both fuel and labour, at present ruling, have been revised. The views now expressed by men whose long experience in the industries of the district gives authority to their opinions, is that the revision in the scale of wages which will be made at quarter-day, together with a reduction of 3s. per ton on forge coal, which is now confidently expected, will bring about the desired reduction, and that a good demand for iron may be fairly looked for.

The plate and sheet mills still obtain the fullest employment, and prices are firm. Noted brands are in especially good request. Messrs. E. P. and W. Baldwin, of the Wilden Iron-Works, have just issued the following quotations for the various qualities of sheets of their manufacture:—"Severn," £15; "Wilden" B, £18; BB, £19; BBB, £20 10s.; B charcoal, £27 10s.; EB charcoal, £29 10s., at works. Marked bars are still quoted £12, but commoner qualities are readily obtainable at from £10 to £11. Excepting by one or two firms specially affected, Belgian competition is now seldom spoken of, and it is quite evident that we are slowly recovering the trade which but a short while ago alarmists would have us believe was lost for ever.

The attention of the trade is again directed to the process of mechanical puddling, and the subject is one of growing importance, inasmuch as puddlers generally are declining to bring up their sons to an occupation involving so much arduous and objectionable toil. A few days ago a number of the mill and forge managers of this district visited the works of Messrs. Robert Heath and Sons, Ravensdale Iron-Works, North Staffordshire, for the purpose of examining some of Danks's patent puddling furnaces in operation, and expressed themselves satisfied with the quality of iron produced, and with the mechanical success of the system. Mr. Robert Heath, M.P., senior partner of the firm, spoke very favourably as to the efficiency of the system, and there is reason to hope that the furnaces will yet prove a commercial success.

The new and rival process, patented by Mr. Crampton, is now receiving the attention of the Iron and Steel Institute.

The demand for pig iron is slowly but steadily improving, and several additional furnaces will be relighted in the course of a few days. Cleveland pigs are still being offered at comparatively low rates, but the competition is not so active as it has recently been. Cinder pigs are quoted £3 to £3 5s., and all-mine (hot blast) at from £5 to £5 15s., and other qualities in proportion.

Gas-tubes are in steadier request, but the condition of the trade is yet far from satisfactory.

The coal trade is inactive, but prices are still unchanged, and the pits are only in partial operation. The little underselling that is going on is confined to the non-associated masters.

THE COAL AND IRON TRADES OF LANCASHIRE.

(FROM OUR OWN CORRESPONDENT.)

There is not much change to notice in the coal trade. In the Manchester market a very fair business is being done by the leading firms, and prices are without alteration. For best house coal there is a moderately good demand, and the best qualities of burgy and slack are not difficult so sell; in fact, I hear that in some cases colliery proprietors have declined to give quotations, as they are at present fully supplied with orders. But this does not apply generally, and commoner descriptions are competing in the market. Inquiries still come to hand for gas coal and cannel, including applications for contracts and ordinary deliveries, and prices are firm.

In the South-West Lancashire districts business is rather quiet, and stocks are accumulating, especially in the best qualities of coal, of which a moderately large amount has now been put down. Stocks generally are considerably heavier than they were last year, but still they are not at all equal to those which were put down during the summer two or three years ago. There is, however, no material alteration in prices, and the prospects of any further reduction this year are becoming more remote. Gas coals are rather quiet, and inquiries for contracts have now generally ceased, but prices are very steady and show no material variation from those last quoted in my reports. Good screened gas coals range about 13s. 6d. to 14s. per ton at the pit, and gas cannel about 35s. per ton.

The wages question in West Lancashire is now assuming a position which threatens a strike. The concession of 10 per cent. having been refused by the men, the West Lancashire Coalowners Association have now determined to insist upon the full reduction of 15 per cent. The men, in adopting the course they have taken, have gone against the advice of Mr. Halliday, the president of the Amalgamated Association, and Mr. Pickard, the Wigan agent; and although they are very strongly inclined to strike, in this they will receive very little encouragement from the association.

The coke trade continues dull, and though there is no quotable alteration in prices, large purchasers can obtain concessions.

A fair business is still being done in the iron market. For forge iron there has been considerably more demand, consequent upon the increase in the orders for rails and other manufactured goods produced from this class of iron, and prices are stiffening. Foundry iron, of which the supplies have been larger, has, however, again been in less request, and prices continue to show a weakening tendency. Manufactured iron is in pretty good demand, and prices are firm. Quotations range about as under:—No. 3 foundry pig iron, delivered in the Manchester district, 72s. 6d. to 76s. 6d. per ton; forge iron about 68s. 9d. per ton; puddled bars about £6 12s. 6d.; standard bar iron, £10; ordinary crown bars about £9 15s.; angles, £9 15s.; light rails, £9 5s.; and heavy ditto, about £8 10s. per ton.

The iron-works are well employed. Founders have work on hand to last them through the year. The forges in the Warrington and other districts are full of orders; and the Lancashire smelters are generally well sold for the present.

COAL AND GENERAL TRADE OF THE NORTH.

(FROM OUR OWN CORRESPONDENT.)

The position assumed by the Durham pitmen, not only in refusing to submit to a reduction of 20 per cent. on their wages, but in making a demand for an advance of 15 per cent., and declining arbitration, is looked upon by a great number of commercial people to mean a strike. Last week, therefore, there was considerable activity shown in the shipments of gas coal at the Tyne dock and other places on that river, and a very active business was done. Coalowners decline to guarantee shipments beyond the 1st of October. In the interim no doubt gas companies will be anxious to replenish their stocks; a run may therefore be expected. Household coals are in moderate inquiry. The Northumberland steam coal trade does not change very much. The best and better qualities of secondsare all taken off for shipment, and there are few stocks of these sorts at the collieries Small steam, however, is no more in request than it has been for a couple of months. A reduction was made last week from 16s. to 12s. per chaldron, without bringing any more business into the market.

The freight market continues extremely flat, and the depression affects all classes of tonnage. There is little business doing at present for small coasters, and there is very limited employment for steamers in the Mediterranean and other trades. As stated last week, freights are likely to keep low during the autumn, as the abundant harvest in this country will very much limit the corn trade from the Black Sea and the Mediterranean generally. In the iron trade there has been a brisk inquiry for foundry sorts. There are a good few orders on hand for pipes in the Cleveland district. The prices of all kinds of iron are being more equalized, and the tone of trade in the district is evidently improving, though slowly. Of course, everything would be thrown into confusion in this great district if there were a strike of the Durham coal-miners.

The chemical trade of the Tyne has continued to be very dull during the past ten days. Prices, which were low enough before, have fallen, and to aggravate the difficulty of manufacturers, there is a strike in two or three of the factories, which is likely to extend. Some time ago a reduction of 10 per cent. took place upon wages. It seems one factory on the Tyne subsequently gave the men the 10 per cent. back. The workmen employed in other factories demanded the same terms. They have been refused; hence the strike. The chemical manufacturers of the Tyne are in no position to make an advance of 10 per cent. upon wages, and as they are realizing little or no profit upon the goods they are making, it is very likely they will allow affairs to drift.

The prospects of a settlement of the wages question in the Northumberland coal district are very hopeful. There is little doubt but the men will make a concession, and there will be a compromise.

REDUCTIONS IN THE PRICE OF GAS.—The Newcastle and Gateshead Company intend to reduce the price of gas within the borough to the old rate of 3s. 4d. less 4d. per 1000 cubic feet discount for prompt payment, and to make a proportionate reduction beyond the borough limits. The Sunderland Company announce that, owing to the reduction of the price of coals, they are enabled to lower the price of gas 6d. per 1000 feet. The Stockton Town Council, at their meeting on the 1st, adopted the Gas Committee's recommendation to make a reduction of 5d. per 1000, making the price of gas, with the discounts, 3s. 4½d. per 1000. The Keighley Local Board on the same day received a report from their Gas Committee, by which it appeared that the profits of the gas-works during last year far exceeded those of any former year, and they recommended that a reduction should be made in the price from 4s. 2d. per 1000 feet to 4s. The amount of discount to large consumers—which is 20 per cent.—to be continued.

Register of New Patents.

APPLICATIONS FOR LETTERS PATENT.

2952.—LOTZ, W. F., Carter Lane, London, "Improvements in the method and means of suspending chandeliers for gas or other lights, and adjusting them to the required height." A communication. Aug. 29, 1874.

2962.—SUDLOW, W. E., Oldham, Lancs, "Improvements in rotary engines for obtaining motive power, and for raising and forcing fluids." Aug. 29, 1874.

2964.—MILLER, W., Boston, U.S.A., "Equalizing or distributing pressure." Aug. 29, 1874.

2968.—SILBER, A. M., Whitecross Street, London, "Improved apparatus for lighting and heating purposes." Aug. 31, 1874.

2978.—JOHNSON, J., Lower Broughton, near Manchester, and ANDREW, E., Manchester, "Improvements in metallic packings for pistons, air-pump buckets, valves, and other purposes." Sept. 1, 1874.

2987.—HUNT, B., Lincoln's Inn, London, "An improved packing for piston-rods, valve-stems, and other similar uses." A communication. Sept. 1, 1874.

2989.—FOSTER, J. K. J., Horbury, Yorks, "Improved apparatus for extinguishing fire, applicable also for distributing water for other purposes." Sept. 1, 1874.

2991.—BYCROFT, H., Burton-on-Trent, Staffs, "Improvements in apparatus for cooling liquids and for condensing vapours." Sept. 1, 1874.

3017.—WALLER, R., Charlotte Street, Fitzroy Square, London, "Improvements in the construction and arrangement of engines and apparatus for and in connexion with the use of steam, vapours, air, carbonic acid gas, and other gaseous matters, as a source of motive power." Sept. 3, 1874.

GRANTS OF PROVISIONAL PROTECTION.

2824.—JOHNSON, S. H., F.C.S., Stratford, Essex, "Improvements in cocks or valves." Aug. 15, 1874.

2841.—LALANDE, F. DE, Paris, "Improvements in the treatment of alizarine for the production of different colours or hues therefrom in dyeing and printing." Aug. 18, 1874.

2847.—RUSS, B., Little Ilford, Essex, "Improvements in the manufacture of gas and in the apparatus connected therewith." Aug. 18, 1874.

2850.—LÜDEKE, J. E. F., Camden Town, London, "Improvements in machinery or apparatus for obtaining and applying motive power, and in turbines and pumps applicable thereto; parts of which improvements are applicable to raising water and other liquids or fluids, and to other useful purposes." Aug. 19, 1874.

NOTICES TO PROCEED.

1308.—GOTTHEIL, R., Berlin, "Improvements in apparatuses for measuring the supply of water passing through pipes." A communication. April 16, 1874.

1424.—WILSON, M., Brixton, Surrey, "An improved method of and apparatus for supplying oxygen in rooms and other closed places wherein the air is vitiated by the burning of gas or other lights." April 24, 1874.

1430.—THOMSON, W., Glasgow, "A new or improved tube-expander." April 24, 1874.

1957.—HAZLEHURST, G. S., Runcorn, Cheshire, "Improvements in apparatus for pumping liquids, particularly applicable for pumping acids." June 6, 1874.

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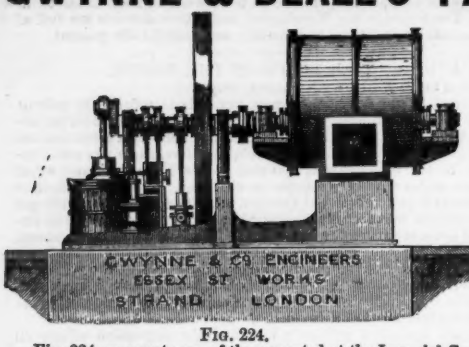

FIG. 224.

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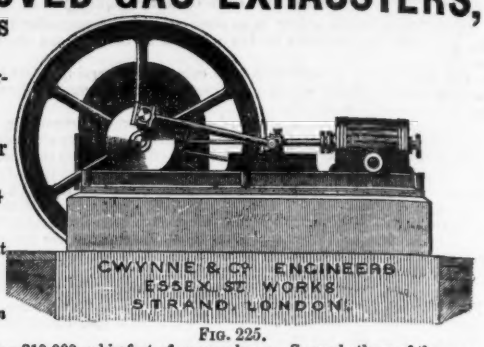

FIG. 225.

Fig. 224 represents one of those erected at the Imperial Gas-Works, Bromley, capable of passing 210,000 cubic feet of gas per hour. Several others of the same size are now on order for the same Company. These Patent Machines combine the highest quality of workmanship and materials, the largest bearings and wearing surfaces, with the most perfect system of action yet discovered. Fig. 225 represents one of a series of four at the Nottingham Gas-Works, each passing 82,500 cubic feet per hour. GWYNNE AND Co. *do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, but to produce Machinery of the very highest quality, and the most approved design and arrangement.* Their prices have been estimated with a due regard to the excellence of the article produced, and when this is taken into consideration, they have no fear for the result. The orders executed this season for Exhausters and alterations to their patented system amount to over 4,000,000 cubic feet of gas passed per hour, and to over 800 horse power for Engines to drive them. In every instance their work is giving the greatest satisfaction. Numerous testimonials and references can be given.

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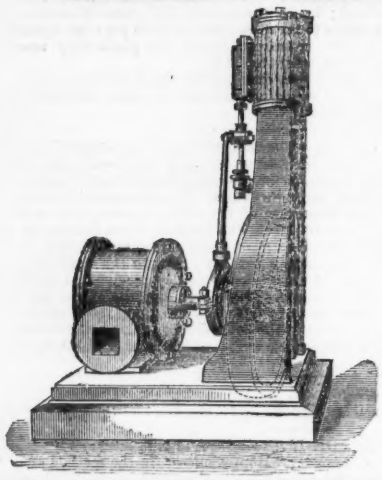
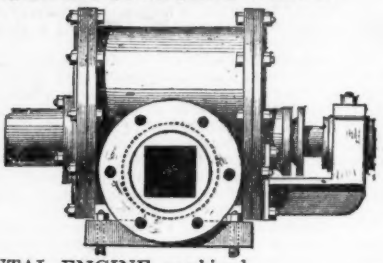


WITH

ENGINE COMBINED

ON

ONE BASE PLATE.



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A CORRECTION.

In Messrs. W. and B. COWAN'S Advertisement in JOURNAL for Sept. 1, an error occurred in Mr. R. Ferrier's Certificate. In the Table of Tests, *Four Gills Column, first line*, "3·3 slow," should have been "0·3 slow."

The Table ought to have been printed as follows:—

CAPACITY—Per Revolution ·25 *Cubic Feet; Per Hour* 30 *Feet.*

Pressure.	When filled with Water to Overflow.	Four Gills off.	Eight Gills off.	Twelve Gills off.
0·5 in.	0·5 fast.	0·3 slow.	0·2 fast.	0·5 fast.
1·0 ,,	0·6 ,,	0·4 ,,	Net	0·3 ,,
2·0 ,,	0·5 ,,	0·2 ,,	0·4 fast.	0·5 ,,
3·0 ,,	0·5 ,,	0·2 ,,	Net	0·5 ,,

WANTED, by the Advertiser, aged 22, a situation as CLERK, or any place of trust, with a Gas Company. Good references.

Address LEX, care of G. Briffett, 3, Union Street, Baneswell, Newport, MON.

WANTED, a Manager, who writes and speaks Italian, to TAKE CHARGE of Gas-Works in Italy.

Apply, by letter, to L. Q., care of Mr. Deakin, 107, LONDON WALL, E.C., stating age, experience, and salary required.

WANTED, by an experienced Gas Engineer, the MANAGEMENT of medium-sized works, or the working part on a lease. At home or abroad. Payment by results. Practically acquainted with manufacture of secondary products; or as Superintendent in a large works making over 100 millions annually. Testimonials, references, and security given.

Address ANTHRACENE, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED immediately, a Working FOREMAN for a small Gas and Water Works within 40 miles of London. He must be capable of taking entire charge of the works, accustomed to the working of engines, exhausters, and water-pumping machinery, doing all fitting required, and of trustworthy character. Wages 30s. per week, with good house, gas, coal, and water.

Apply, with references and character, to MARKUS, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, for Gas-Works abroad, a good general MACHINIST, capable of erecting and working steam-engines and exhausters, repairing pumps, valves, &c., and attending to all machinery and apparatus proper to a gas factory. As he will be required to do all his own repairs, he should be a good hand at both the lathe and the vice. It is also desirable that he should have had actual experience in a gas factory.

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Particulars may be had of the undersigned,

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THE Bracknell Gas Company, Limited, invite TENDERS for providing and laying about 842 yards of 2-in. SOCKET-PIPES, with syphons, branches, &c., complete.

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F. W. HUNTON, Secretary.

Bracknell, Berks, Sept. 3, 1874.

CANNEL.

THE West Yorkshire Iron and Coal Company, Limited, will be glad to receive FORMS for TENDERS from Gas Companies and others requiring a supply of CANNEL.

Address, 72, Wellington Street, LEEDS.

TO COKE CONTRACTORS AND OTHERS.

THE Directors of The Gaslight and Coke Company are prepared to receive TENDERS for the purchase of the whole or any portion of the COKE which will be manufactured at their works, at Beckton, on the River Thames, near Barking Creek, for One year from the 1st of October next.

Tenders should state the price per chaldron of 36 bushels for delivery free on board barges alongside the Company's Wharf at Beckton, or into trucks on the Company's line of railway, which communicates with the Great Eastern Railway near North Woolwich.

Contractors will be required to enter into a bond with sureties for the due performance of their contract. Payments monthly in cash.

Further information, if desired, may be obtained at this Office on application to the undersigned, to whom sealed tenders, marked "Tender for Coke," should be sent on or before Thursday, the 17th proximo.

By order,

JOHN ORWELL PHILLIPS, Secretary.

N.B.—The Directors do not bind themselves to accept the highest or any tender, and reserve to themselves the right of accepting the whole or any portion of any one tender.

Horseferry Road, Westminster, Aug. 24, 1874.

TO COKE CONTRACTORS AND OTHERS.

THE Directors of The Gaslight and Coke Company are prepared to receive OFFERS from parties willing to undertake the SALE, on commission, of COKE, manufactured at their works, at Beckton, for One year from the 1st of October next.

Further information, if desired, may be obtained at this Office on application to the undersigned, to whom sealed tenders, marked "Sale of Coke on Commission," containing reference to a London banker, should be sent, on or before Thursday, the 17th proximo. By order,

JOHN ORWELL PHILLIPS, Secretary.

Horseferry Road, Westminster, Aug. 24, 1874.

TO WATER-WORKS CONTRACTORS.

THE Weardale and Shildon District Water-Works Company invite TENDERS from competent parties to undertake the entire construction of Two SERVICE RESERVOIRS; one situate near North Beechburn, about two miles from Bishop Auckland, which is to contain 3 million gallons; the other situate on land adjoining Wood Lane, about half a mile from Ferryhill Village, which is to contain 2 million gallons of water.

Plans and specifications can be seen, and lists of quantities obtained, at the Office of the Engineer, Mr. William Bouch, North Road, Darlington.

Tenders to be forwarded to me, on or before Saturday, the 12th day of September.

The Company do not bind themselves to accept the lowest or any tender.

WILLIAM HARDING, Secretary.

Russel Street Buildings, Darlington, Aug. 26, 1874.

CATHELS'S Patent District Dry Gas- GOVERNOR is the only perfect self-acting contrivance for Regulating the Pressures in the higher levels of a district.

For prices, &c., apply to the Manufacturers, Messrs. GUEST AND CHEIMES, ROTHERHAM.

CATHELS & TERRACE'S Patent Four- WAY DISC GAS-VALVE is the simplest and best Valve for Purifiers, and as a By-pass for other apparatus in Gas-Works. It is always gas-tight, and has no springs, ground faces, or other delicate parts. By its use the flow of the gas cannot be accidentally stopped, and it never sticks.

For prices, &c., apply to the Manufacturers, Messrs. GUEST AND CHEIMES, Foundry and Brass Works, ROTHERHAM.

PATENT FUEL AND LIME FOR PURIFYING FROM FOUL LIME.

By a simple process the Foul Lime is converted into Fuel, by the combustion of which the lime is reproduced as a purifying agent.

Licences to work the invention will be granted to Gas Companies on very reasonable terms.

For further particulars apply to Mr. E. MADDOCKS, Manager of the Gas-Works, KETTERING.

The adoption of the above invention, without a licence from the Patentee, will be an infringement of the patent, and will subject the person or company guilty of such infringement to legal process.

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Advises on all matters connected with the Distribution of Gas, Public Lighting, Gas Testing, &c.

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Mr. ALFRED LASS,

60, CORNHILL, LONDON, E.C.,

Is prepared to open the Books, and, if necessary, keep the Accounts of Gas and Water Companies.

To examine the Books and Accounts, and prepare Balance-Sheets for the information of Directors.

To assist Secretaries in preparing Balance-Sheets, according to the "Gas-Works Clauses Act, 1871;" or may be consulted with respect to Accounts generally.

GAS COMPANIES ACCOUNTS.

EDWARD SANDELL,

PUBLIC ACCOUNTANT,

The Projector of the Gas Companies Analysed Expenditure Account Book, having had twenty years experience in opening, keeping, auditing, and investigating Gas Companies Accounts, offers his services for similar purposes, and also in preparing Financial and Statistical Accounts for Arbitrations or Parliamentary Applications. References to numerous Gas Companies and the most eminent Consulting Gas Engineers.

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A. C. FRASER, of 16, St. Swithin's Lane, E.C., who for 20 years has been engaged in the construction and management of works, may be consulted at the above address on all matters relating to Gas and Water Supply.

Plans, specifications, and estimates furnished. Patent Ribbed Retorts, Fire Goods, and Fttings of every description on moderate terms.

COST PRICE SHEETS.

MANUFACTURE AND DISTRIBU- TION OF GAS. These sheets are the same as were laid before the Dublin Meeting of the British Association of Gas Managers; but in the REPRINT, NOTES have been added for the guidance of those using them. Copies of the two sheets may now be had, price 5s.

South Shields. W. J. WARNER.

TO GAS COMPANIES, ENGINEERS, MANAGERS, &c.

DESIGNS & PLANS of GAS-WORKS,

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BRONNER'S PATENT GAS-BURNERS give 99 per cent. of light, as compared with 27 per cent. given by ordinary burners, with equal consumption of gas.—*Vide* "Gas Referees Report," published June, 1869.

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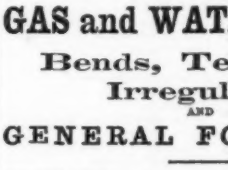

effecting a great saving of time, labour, and expense.

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ESTIMATES and PRICES on APPLICATION.

GEORGE BOWER,

GAS & WATER-WORK ENGINEER & CONTRACTOR,

ST. NEOTS,

HUNTINGDONSHIRE.

The selected list of Gas and Water Works herewith given, is exclusive of a great number either erected complete, or the plant supplied to Agents and Engineers, the destinations of which it would not be proper to give, and of minor alterations and additions to existing works.

It will be observed that the list includes works supplied for the largest city as well as the smallest village, and to the British, the French, the Japanese, and the Italian Governments, the Shah of Persia, H.H. the Viceroy of Egypt, and a vast number of other persons of distinction. Gas-works have been sent to all quarters of the globe, and for making Gas from almost every material which will burn with a flame in open air; coal, lignite, wood, peat, bones, resins, the refuse of the olive presses, and the carcases of animals, are among the solids which have been used in one locality or another. Resin-oil, tallow, petroleum, paraffin oil, refuse of the oil distilleries, and other oils, are among the fats and liquids which have been used.

For the Indian Government, a complete plant from the retorts to the burners has been supplied, for making gas for many thousands of lights from crude mineral oil of the country.

The Engineering Works are at St. Neots, and the Foundry at West Hartlepool; and EVERYTHING connected with gas lighting is manufactured at either one place or the other.

Mr. Bower desires to draw attention to many parts of gas apparatus which have originated with him, and which he believes not to be without merit; the following are some of them:—The Combined Purifying Apparatus, patented in 1852 and 1863; the Rising Plug-Valve, with special adaptation for working any number of Purifiers; By-pass and Four-way Valves, Engines and Exhausters on one bed-plate, Street Lanterns without bars at the side to intercept the light, and many other apparatus which may be found in his "Gas Engineer's Book of Reference."

For small Gas Apparatus, specially designed for private consumers, either Mr. Bower or his Licensees or Agents have obtained a large number of medals at the various exhibitions in this and other countries.

As an engineer, Mr. Bower will design and carry out Gas or Water Works on Commission; or, as a Contractor, he will carry them out at a lump sum, inclusive or exclusive of buildings.

A SELECTION OF GAS AND WATER WORKS

DESIGNED, AND (WITH SCARCELY AN EXCEPTION) ERECTED, BY

GEORGE BOWER,

ENGINEER & GAS-WORK CONTRACTOR,

ST. NEOTS, HUNTINGDONSHIRE.

TOWNS AND VILLAGES.

Almwch	Isle of Anglesea
Ampthill	Bedfordshire
Barkway	Hertfordshire
Barrow	Lincolnshire
Beaufort	Breconshire
Belgrano	Argentine Confederation
Billingborough	Lincolnshire
Bishop's Castle	Shropshire
Bolsover	Derbyshire
Bourne	Lincolnshire
Buckfastleigh	Devonshire
Buenos Ayres	Two Works, one for the Argentine Gas Co., the other for the Mutual Consumers Gas Co.
Burford	Oxfordshire
Caerleon	Monmouthshire
Caistor	Lincolnshire
Casale	Italy
Charing	Kent
Chertsey	Surrey
Childwall	Lancashire
Chimay	Belgium
Cleethorpes	Lincolnshire
Christchurch	New Zealand
Coalville	Leicestershire
Collingham	Nottinghamshire
Colombo	Ceylon
Cottingham	Yorkshire
Crickhowel	Breconshire
Dokkum	The Netherlands
Donnington	Lincolnshire
Dragten	The Netherlands
Easton	Northamptonshire
Ebbw Vale	Monmouthshire
Eu	France
Evesham	Worcestershire
Folkingham	Lincolnshire
Gefle	Sweden
Harlingen	The Netherlands
Hatfield	Hertfordshire
Haverhill	Suffolk
Higham Ferrers	Northamptonshire
Hirwain	Glamorganshire
Horbling	Lincolnshire
Irthlingborough	Northamptonshire
Kelvedon	Essex
Kempstone	Bedfordshire
Ketton	Rutland
Kimbolton	Huntingdonshire
King's Cliffe	Northamptonshire
Kirton-in-Lindsey	Lincolnshire
Llandilo-vawr	Carmarthenshire
Llantrissant	Glamorganshire
Littlehampton	Sussex
Littleport	Cambridgeshire
Looe	Cornwall
March (*remodelled*)	Cambridgeshire
Middleham	Yorkshire
Milverton	Somerset
Minehead	Somerset
Mountsorrell	Leicestershire
Navenby	Lincolnshire
Nayland	Suffolk
Nettlebed	Oxfordshire
Newport	Essex
Oakham	Rutland
Olinda	Brazil
Pangbourne	Berkshire
Patrington	Yorkshire
Pelotas	Brazil
Porto Alegre	Brazil
Ponce	Porto Rico
Port Elizabeth	Natal
Potton	Bedfordshire
Purmerende	The Netherlands
Quorndon	Leicestershire
Raunds	Northampstonshire
Redbourne	Hertfordshire
Red Hill	Surrey
Repton	Derbyshire
Rhyader	Radnorshire
Rio Grande do Sul	Brazil
Risca and Pontymister	Monmouthshire
Rockingham	Northamptonshire
Roux	Belgium
Saffron Walden	Essex
Sandy	Bedfordshire
San Sebastian	Spain
Schagen	Holland
Shanklin	Isle of Wight
Skibbereen	Ireland
Somerby	Leicestershire
Spa	Belgium
St. Blazey	Cornwall
St. Ives	Hunts (*remodelled*)
St. Ives	Cornwall (*remodelled*)
St. Neots	Hunts (*remodelled*)
St. Heliers	Jersey (*Water-Works*)
Stevenage	Hertfordshire
Sudbury	Suffolk (*Water-Works*)
Sutton Valance	Kent
Syston	Leicestershire
Swineshead	Lincolnshire
Thorney	Cambridgeshire
Tunis, City of	Tunis
Turvey	Bedfordshire
Tver	Russia (*Gas and Water Works and Public Baths*)
Vitoria	Spain
Voronege	Russia (*Water-Works*)
Wainfleet	Lincolnshire
Waterbeach	Cambridgeshire
Wellingborough	Northamptonshire (*remodelled*)
Wellingore	Lincolnshire
West Houghton	Lancashire
Whittlesea	Cambridgeshire (*remodelled*)
Whitwick	Leicestershire
Wigston	Leicestershire
Wincanton	Somersetshire

A SELECTION OF GAS AND WATER WORKS

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His Grace the Duke of Buckingham and Chandos.	Stowe Palace, Buckingham [ford
His Grace the Duke of Grafton	Wakefield Lodge, near Stoney Strat-
His Grace the Duke of Marlborough	Blenheim Palace, Woodstock
His Grace the Duke of Newcastle	Clumber Park, Worksop
Her Grace the Dowager Duchess of Northumberland	Stanwick Hall, Darlington
The Most Hon. the Marquis of Downshire	Easthampstead Park, Wokingham
The Most Hon. the Marquis of Exeter	Burghley House, Stamford
The Most Hon. the Marquis of Salisbury	Childwall, near Liverpool
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Ames, Colonel Lionel	The Hyde, St. Albans
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Benyon, Rev. E. R.	Culford Hall, Bury St. Edmunds
Bickford, Major	Tucking Mill, Cornwall
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Phillips, C., Esq.	Shillingthrope Hall, Stamford
Pilgrim, C., Esq.	Akeley Wood, Buckingham
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Ditto	Military Station	Rawul Pindee, India
Ditto	Ditto	Allahabad, India
Ditto	Ditto	Fort St. George, Madras, India (*remodelled*)
French Government	Tunnel under Mont Cenis	France
Ditto	Ditto	Italy
Italian Government	Six Railway Stations	Italy
Ditto	Mining Department.	
Japanese Government	Iron-Works	Monmouthshire
Abersychan Iron Company	Paper Mills	Ivy Bridge
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Arnold, H. T., Esq.	Three Coal Pits	Staveley
Barrow, R., Esq.	——	Sourabaya, Java
Bayer and Company	——	Poulignac Croisie, France
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Bolchow and Vaughan	Ditto	Eston, near Stockton
Ditto	Iron-Works	Liege, Belgium
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Billing and Son	——	Paris
Blount and Company	Tin-Works	Pontardulais, near Swansea
Boughton, Smith, and Company	Monastery	Antwerp
Brothers of Charity, The Order of	Silk Factory	Tewkesbury
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Brown, B., Esq.,	——	Sheffield
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Cocker and Sons	Paper Mills	Wolvercot, Oxford
Combe and Son	Cotton Mills	Castellana, Milan
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County Asylum	For Export	Manchester and London
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De Bergue, C., and Company	Peat Charcoal Works	Near Neath
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Elliott Patent Sheathing Company	Pleasure Gardens	Near Neath
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Eives and Macey	For Export	London
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Great Northern Railway Company	Ditto	Essendine
Ditto ditto	Ditto	Audley End
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Hall, J., and Company	——	Winchester
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Harrison, Ainslie, and Company	For Export	Newcastle
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Hughes, H., Esq.	Ostroff Cotton Mill	St. Petersburg
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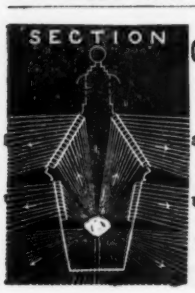

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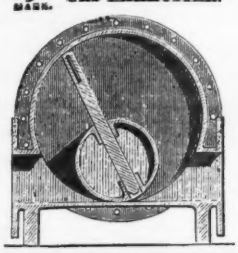

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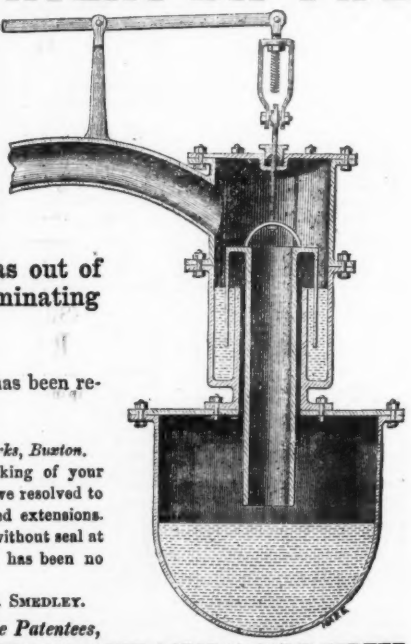

The advantages are—
1st, There is no pressure on the Retorts.
2nd, No deposit of Carbon.
3rd, No scurfing required.
4th, Never a choked Ascension Pipe.
5th, Saves Fuel and Wear and Tear.
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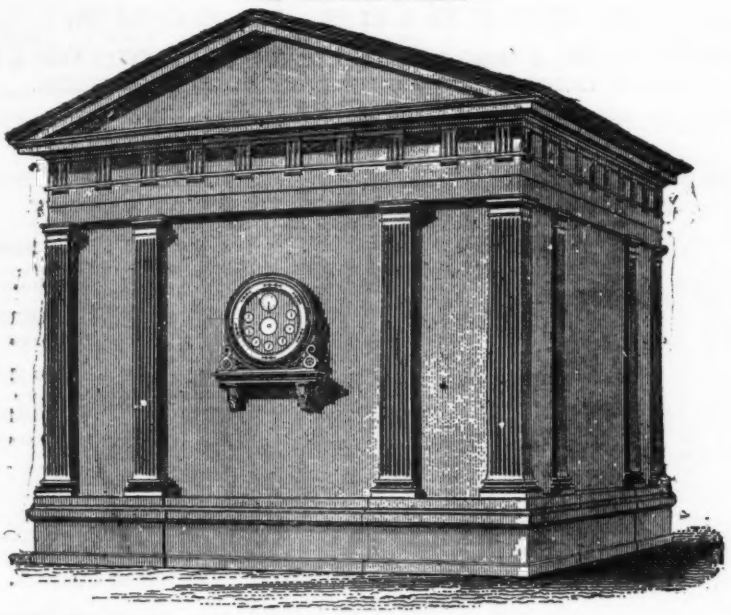

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STATION GOVERNORS—the Gasholder cannot tilt and cause accident.

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"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—*Artizan.*

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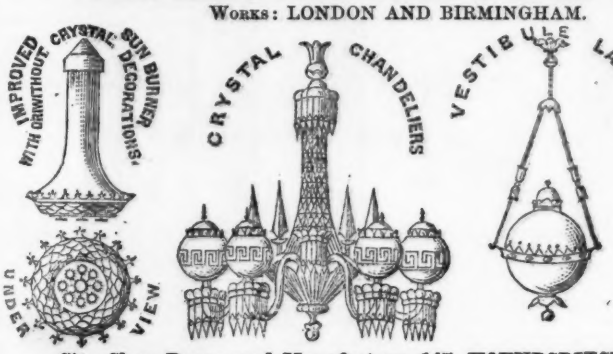

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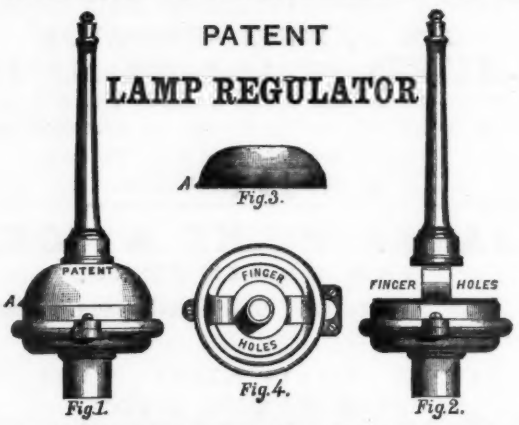

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Attention is respectfully requested to the following extract from a lecture "On the Economical Combustion of Coal Gas," delivered to the Philosophical Society of Glasgow, by Dr. W. Wallace, F.R.S.E., F.C.S., Gas Examiner for the city of Glasgow, on the 4th of March last:—

"A few years ago, a simple form of Gas Regulator for Street Lamps was introduced, I do not know by whom, and various forms of it, and improvements on it, have been made by many practical gas engineers. Of all the modifications of the instrument, the best in my opinion is that of Mr. D. Bruce Peebles, of Edinburgh; in fact, his Lamp Regulators are so superior that they are likely to supplant all others. Already about 9000 of these have been applied to the street-lamps in Glasgow, and I understand it is the intention of the authorities to introduce them all over the town. The saving thereby effected I calculate to be about £6000 per annum, without any diminution of light. One of the great advantages of Mr. Peebles's apparatus over all others is that it can be regulated while the gas is burning."

Since the above date, another 1000 have been supplied to Glasgow, and they are being largely adopted at home and abroad.

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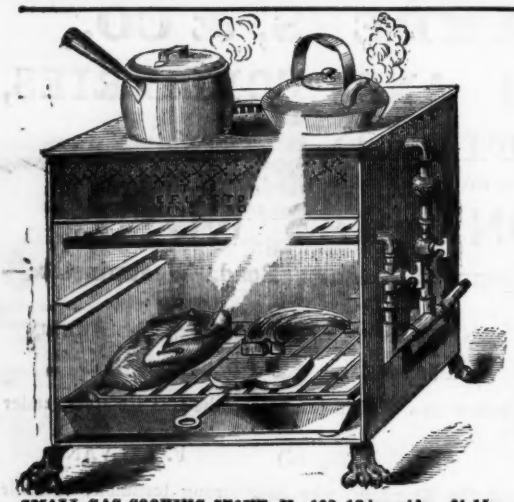

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